A

TREATISE

ON

FOREIGN BODIES

IN

SURGICAL PRACTICE

BY

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FOREIGN BODIES IN THE VAGINA.

CHAPTER I.

SOME classical authors consider foreign bodies of the vagina as very frequent compared with those of the other natural canals. But a serious study of the subject enables us to see that this is not so, and that of all cavities which are readily accessible this is perhaps the one which is least frequently the site of foreign bodies. This is, moreover, very readily explained, if we reflect upon the dimensions which this organ may acquire and upon the facility with which the introduced finger may extract such bodies, which, being small and regular, do not present any resistance.

Despite these restrictions, the list of vaginal foreign bodies includes the most varied objects, as we can see by reading the following table, which is arranged in the order of frequence:

Table of Foreign Bodies of the Vagina.

Foreign bodies of the vagina....

- Pessaries.
- Spools.
- Needle-cases.
- Bottles
- Neck of a bottle.
- Beer-glass.
- Goblet.
- Sponges.
- Threaded needle, ivory needle.
- Box of pomade.
- Compass.
- Tin cup.
- Leech.
- Handle of a brush.
- Piece of a glass syringe.
- Various needles.
- Hair-pins.

SIZE OF FOREIGN BODIES OF THE VAGINA.—The well-known elasticity of the vagina sufficiently explains how foreign bodies as large as bottles and goblets have been introduced, and if we recall the dimensions which the vulvar orifice slowly acquires during labor at the moment of the passage of the fœtal head, we will no longer be surprised that, in consequence of habit or from the effect of slow manipulations, this varied series of objects has been introduced without rupture. Some have very large diameters, such as glasses, a preserve-jar, to which Lisfranc refers, etc.; others, on the contrary, are only enlarged in one plane: this is true especially of pessaries, which are readily introduced on edge and are placed in the vagina in order to support or replace the uterine neck. The size of these bodies is only limited by the walls of the pelvis—that is to say, they may be as large as a fœtal head, measuring nine to ten centimetres in diameter. But they do not attain these limits, as a rule, though they none the less produce serious accidents by their presence.

Shape of Foreign Bodies in the Vagina.—These bodies are usually regular and rounded. They must always be blunt in order to be introduced into the vagina, otherwise they will tear the parts and drive back the mucous membrane, and produce serious disorders. Cups, pessaries, spools, etc., are regular; sometimes the bodies are elongated, like the handle of a brush, referred to by Erichsen, knitting-needles, hair-pins, a compass in a case cited by Sonnié-Moret.

In the latter event, the foreign bodies are often placed crosswise or obliquely, and are retained in the vagina by being embedded in the walls. In this respect their mode of fixation differs markedly from that of round and very large bodies. While the latter are retained in the canal by the contractions of the muscular coat, which is very powerful and which immobilizes the body, the latter, on the contrary, are fixed in the wall, which becomes perforated by contracting upon them.

The bodies present a considerable length in some cases. A girl, mentioned by Hilton and observed in Guy's Hospital, had introduced into the vagina a threaded needle made of bone and ten inches in length. Another case referred to the handle of a brush of cedar-wood and measuring five and a half inches.

Another interesting property of vaginal foreign bodies is their composition: some are made of metal, like certain pessaries, of silver, copper, tin (cup), wood (spools), ivory. But there are a very large number which, from their composition (glass, porcelain, stone-ware) are fragile and constitute a separate class, which is especially interesting with regard to treatment. It sometimes happens that they break, and become dangerous to the adjacent walls and to the surgeon.

Sometimes they are solid, like spools; at other times they are hollow and have a large opening, like a glass or cup, or a narrow opening like a bottle. Finally, there are some which, like metallic pessaries, are provided with an internal cavity closed on all sides. In this category we must include the needle-cases, which sometimes contain pins and needles. These are not idle considerations, because the vaginal mucous membrane may penetrate into all these cavities and give rise to the curious phenomena of invagination, examples of which are not by any means rare.

Hitherto we have only considered solid and resisting foreign bodies, which offer a fixed point of support to the contractions of the organ; but some, possessing a soft consistence, are lost in the depths of the vagina. These include sponges which have been left in the vagina for a long time, and which are only retained in this position by the elasticity of their tissue. They also embrace leeches which have been accidentally introduced into the organ, and which become fixed to the walls, gorging themselves with blood. They impart a very deceptive sensation to the touch, and one which, as we shall see, is very easily mistaken for other grave affections, especially when the body is situated deep within the vagina, as almost always happens.

SITUATION, MOBILITY, FIXATION.—The foreign bodies are never observed at the vulva; they are situated, by preference, in the deeper parts. Even when very large objects have been arrested, the vulva is not open, and it is only after having separated the labia that we can detect any strange anomaly. Thus, as I have previously stated, bodies of a regular shape are always large and are retained by the circular contraction and elasticity of the walls of the vagina. As these bodies almost always have a cylindrical or cylindro-conical shape, the pressure is exercised in preference upon the two extreme and most projecting planes, and at these points it is very considerable and may even be sufficient to strangulate the adjacent parts. These adjacent parts are almost entirely wanting on the sides, which are more relaxed and extensible, while the urethral canal, fundus of the bladder, and rectum, are found in the antero-posterior plane; these are the parts which support the effects of the pressure. Hence the perforations of these organs are the most frequent of all the graver complications due to the presence of foreign bodies in the vagina. There is a complete analogy between the action of the fœtal head, (which remains in the vagina for an abnormally long period,) and this entire class of objects. This is the only point of view upon which Delpech can fall back in order to explain the heterotopy of his study of labor, which he annexes to that of foreign bodies. I have supposed that the axis of the object coincides with the long axis of the vagina, as most frequently occurs. The reverse arrangement has been sometimes observed, the axis of the object being more or less oblique to that of the vagina. This results in an irregular dilatation of the vagina, a greater lateral pressure, and new conditions of fixation. The body, a cup for example, being situated obliquely, sometimes pushes, by means of its extremities, the upper wall to the right, the lower wall to the left, a little behind on one side, a little in front on the other, and the mucous membrane is cut upon the sharp edge of the vessel. This is the cause of the difficulties in extraction, because the fixation is then very marked and the most projecting parts can only be disengaged with great difficulty. Under what influence do these displacements and inclinations of the axis occur? It is very difficult to determine this accurately, but it appears probable that the efforts made by the patients to withdraw them are not indifferent with regard to their production.

When long foreign bodies are situated in the axis of the vagina, as very rarely happens, they are not very steady. But this is not true of those which are situated more or less obliquely, and whose ends are imbedded in the walls, sometimes on one, sometimes on both sides.

Observation by Briess.—Pin in the vagina.—A robust servant, æt. twenty-three years, stated that she had been suddenly seized with pains in the abdomen six days prior to her admission into the hospital. These pains kept on increasing, and were attended with strangury and constipation. No tumor was discoverable anywhere. Palpation of the left half of the abdomen produced great malaise; the patient was menstruating. On the fifth day after her entrance into the hospital, and after the menses had ceased, the vagina was examined, and a foreign body was recognized, which was narrow and firmly embedded in the posterior cul-de-sac of the vagina. The extraction was performed with difficulty with a pair of forceps, and the body was found to be a pin, which was slightly bent in its upper third. After the extraction the pains ceased and recovery occurred. (Wien. med. Presse, IX., 1868, and Schmidt's Jahrb., 1870, V. 147, 308.)

CHAPTER II.

PRIMARY SYMPTOMS AND ACCIDENTS.

THE differences between the various foreign bodies and the symptoms to which their presence gives rise, are so great that it is proper to make a distinction between those which, like glasses, bottles, etc., immediately produce functional disturbance, and those which are well tolerated by the vaginal canal. We must entirely eliminate from this chapter all pessaries introduced for surgical purposes, and which are not only well tolerated, but often even produce relief from old pains and from very marked functional disorders; in addition, all spools, sponges, etc., whose primary innocuousness is absolute, and whose presence is entirely compatible with the maintenance of health. The symptoms and accidents produced by the presence of large foreign bodies belong to three categories: 1, subjective symptoms; 2, functional disorders; 3, objective symptoms.

1. SUBJECTIVE SYMPTOMS.—Pain appears at an early period after the introduction of large foreign bodies, and it hardly ever disappears as long as the latter are present. It is due to the pressure of the walls of the vagina upon the projecting angles, and, at the same time, to the abnormal dilatation.

It is very difficult to define this pain, and authors are not explicit upon this point in their observations. It appears to be both a feeling of weight and a dull pain which is similar to vesical and rectal tenesmus, and inspires the patients with false fears. We must also add that pain is produced by the irritation of the vagina, which soon follows the introduction and which results from the permanent contraction of the muscular coat. It is radiated into the kidneys, perineum, and thighs, and has considerable analogy with the pains of parturient women during the period in which the head presents at the vulva.

2. FUNCTIONAL DISORDERS.—The phenomena of compression produce very serious symptoms in the vicinity, and these may become very grave if they persist. They include the retention of urine and fæces, which are due to the distress produced by their expulsion. At the same time we may also observe menstrual disorders from the mere fact of the vaginal obstruction, which no longer permits the discharge of the secretions and fluids formed above the point occupied by the obstacle. The accidents in the vicinity do not always appear immediately after the introduction, but at the period in which the reaction produced by the presence of the foreign body commences. In fact, the already very great pressure caused by the object is added to that which results from the swelling of the mucous membrane and of the submucous cellular tissue, so that the obstruction of the excretory canal of the urine may gradually become complete. The retention of fæces is very rarely complete, as in the case reported by Bayard, and even after a little while and without any surgical interference, the passage of fæces is re-established, with alternations of constipation and diarrhœa. Masses of fæces form and are expelled *en masse* at the moment of the discharge.

On the part of the bladder, the primary retention disappears, or perhaps it even terminates in a very painful and annoying incontinence. In the beginning, all the efforts at micturition lead to nothing and produce an exacerbation of the vesical and rectal pains. At a little later period, the bladder expends its contractile force in fruitless efforts; the water, flowing drop by drop, is changed, becomes strongly ammoniacal, flows over the genitals, which it irritates and inflames, and soon gives rise to a putrescent odor.

Nevertheless, the suffering produced is not sufficient to compel the patients to confide their story to the physician, and in almost all cases they do not determine to do this until much later, after the secondary symptoms have appeared.

3. OBJECTIVE SYMPTOMS.—The irritation produced by the presence of the foreign body causes an increase, and at the same time a rapid change in the vaginal secretion, which immediately becomes nauseous, and then muco-purulent in a very short time. Little by little the external genital organs become swollen, and the finger, when introduced into the vagina, enables us to recognize a large ridge of mucous membrane whose origin it is difficult to explain, if we do not know the nature of the accident, and if the hollow foreign body like a drinking-glass is open on the side nearest to the vulva. This ridge is formed by the swelling of the vaginal mucous membrane in front of the anterior border of the object. If the body is solid or if a portion is outside, the finger encounters an abnormal convex obstacle, which is almost entirely immovable, and the outlines of which it is impossible to determine, so great is the force of the constriction pressing upon it. The bladder, which is full of urine, projects above the pubis, where it may be very clearly defined by percussion.

The primary symptoms produced by the presence of pointed foreign bodies are somewhat different, because they act in another manner, by producing pain and frequently a lesion of the wall in a very localized spot. If the foreign body is pointed, it may give rise to a perforation which follows a different course in different cases. When the peritoneum is wounded, a fatal peritonitis develops and rapidly carries off the patients in the large majority of cases. At other times, after the perforation, the foreign body progresses insensibly into the cellular tissue of the pelvis and gives rise to other accidents after a more or less remote period. But this passage rarely occurs at the onset, and I will postpone its investigation to the discussion of the secondary accidents.

CHAPTER III.

LATE ACCIDENTS.—TERMINATIONS.

TOLERANCE.—DURATION OF ITS PRESENCE.—If we compare the period at which the foreign bodies have been introduced—I now refer to the most numerous ones, pessaries for example—with that at which the patients begin to complain, we will find very marked differences. Thus, it is not rare to find that an old woman will seek advice with regard to accidents produced by a pessary which has remained in the vagina for ten, twenty, or twenty-five years, and which has even escaped her memory. In another case, a wooden spool was found in a woman thirty-six years of age, who had introduced it during some lewd practices at the age of fourteen. I have taken extreme cases, but there are many of the same kind, and it is only very large, pointed, or cutting foreign bodies which force women to consult a physician.

The period of latency or tolerance of vaginal foreign bodies is therefore very long, and we are inclined to attribute to them a comparative benignity which is merely apparent. Many of these women have, for a number of years, complained of symptoms to which they have not paid much attention, and some have suffered from peritonitis or hemorrhage. Especially vesico-vaginal fistulæ—that disgusting disease—may exist in some of these patients for a long time before they seek assistance, so great are the negligence and uncleanliness of certain females, especially at an advanced age.

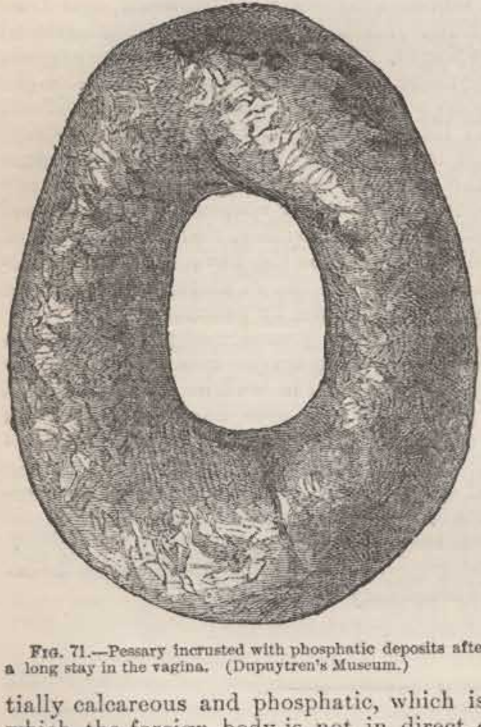

FIG. 71.—Pessary incrusted with phosphatic deposits after a long stay in the vagina. (Dupuytren's Museum.)

INCRUSTATION.—VARIOUS CHANGES OF THE FOREIGN BODIES.—During the long period of relative tolerance which intervenes between the introduction and the appearance of grave symptoms, the foreign bodies undergo a certain number of changes and transformations, the most frequent of which is incrustation with calcareous deposits. On account of the shape of the foreign bodies and their very considerable size, we can understand that these concretions are only sufficiently thick and extensive to form a vein-stone over the foreign bodies, the surface of which they partially cover. In speaking of incrustations, therefore, we only refer to a mass partially organic, partially calcareous and phosphatic, which is deposited at those points in which the foreign body is not in direct contact with the walls, for the body preserves its ordinary appearance in these situations, if there is no perforation. Very frequently, when the physician is called to observe one of these concretions, the local disorders have already attained a considerable intensity and an urethro-vaginal or vesico-vaginal fistula is present, so that the action of the changed urine is added to the special causes of incrustation in the vagina and contribute largely to the increase of the concretions. But it is very well known that they also exist apart from urinary perforations, and a very long time need not elapse before we can detect their presence. Thus Hubbauer[1] relates that he found, in the vagina of a girl nineteen years old, an incrusted glass which was very firmly embedded; it had been there for six months, and the surgeon experienced great difficulty in performing extraction. The first cause of the incrustation consists in the change in the secretion of the mucous glands of the vagina; the latter, becoming inflamed, secrete a fluid whose odor, abundance, character and extreme richness in salts prove the change, and the foreign bodies, by a sort of special selection, become the centre of these deposits, which, being at first isolated in points, finally unite and become granular, of slight consistence, and very nauseating. At a later period, when a vesical perforation has been produced, the portion which projects into the bladder may become the site of a calculous concretion of vesical origin, and the urine, flowing along the foreign body into the vagina, continues its action upon the latter. Holmes relates that the neck of a bottle was found in a woman's vagina; a piece of the glass had entered the bladder, and a calculus had formed upon it as well as around the vaginal portion.[1] Sometimes even the mere existence of a perforation favors the formation of one or more vesical calculi, although the foreign body has not penetrated into the bladder. In one case which will be reported farther on, they numbered no less than five, which were contained in the recesses of a pouched bladder.

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[1] Wurtemburg Journ., 1862.

All foreign bodies appear susceptible of receiving incrusting deposits, but there are some, like cloth, wood, glass, which present a greater predisposition. Sponges which have been forgotten in the vagina may also, according to Capuron and A. Cooper, become the site of very firm and irritating incrustations. Metals, on the contrary, are more refractory, unless the nature and properties of the secretion should not be the same in all individuals, a thing which is possible and may explain the singularity of the following case, taken from Morand's learned treatise.[2]

Observation.—Prolonged presence of a silver pessary without incrustation.—Perforation.—A woman, who was more than sixty years old, had worn a silver pessary for several years. Morand being called, found the pessary surrounded by more or less firm fungous excrescences, and decided that it was necessary to remove it. But this was found to be very difficult; the pessary appeared to be attached and fixed in several places, and it could only be withdrawn after some violence and rupturing several of the bands which held it. When he had removed the pessary, Morand was very much astonished to find it perforated in several places, apparently from the effect of the acid matters which were secreted by the vagina. These irregular openings were filled by portions of the internal membrane of the vagina, which, having swollen and elongated in the thickness of the pessary, there formed hooded excrescences which retained putrid matter in the cavity of the pessary. Slight hemorrhages and some pain, which yielded very quickly. A cicatrix formed and had the good effect of producing recovery of the prolapsus uteri.

However, it is not necessary to invoke the corrosive action of the vaginal secretion in order to explain the changes in some foreign bodies, such as cork. The mere prolonged stay in this moist, warm locality, is amply sufficient. Hence, there is nothing astonishing in the fact that Chopart, upon withdrawing an incrusted foreign body from the vagina, found the cork pessary, which formed the nucleus, entirely rotten. A similar instrument withdrawn by Gosselin[3] had remained in the vagina for thirty-two years! It was incrusted with calcareous salts. But metals are always attacked by the vaginal fluid, and much more markedly than by many of the other fluids of the organism. Thus, at the autopsy of a woman who had had a cup in the vagina made of an alloy of tin, oxide of lead was discovered in the gangrenous detritus.

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[1] London Medical Gazette, 1854.

[2] Mem. de Morand: Anc. Acad. de Chirurgie, 1877, p. 421, obs. XI.

[3] Gaz. des hôpitaux, 1846.

Later Accidents.—1. *Large foreign bodies.*—The accidents produced by the prolonged presence of foreign bodies consist of local changes and functional disorders in the vicinity. I will commence with the first because they constitute the cause of the others. The bodies act locally in two different ways, either by producing in the entire vagina, and especially around it, an inflammation which terminates in the formation of fungosities, or by giving rise, at one or more points, to perforations which are merely the results of gangrene from compression.

The inflammation is rarely very acute, and is limited to a chronic vaginitis, which is shown by pain, redness, and swelling of the mucous membrane, and by the abnormal secretion.

But matters run a somewhat different course in points which are subject to prolonged contact and continually press upon the surface of the body. The mucous membrane is sometimes eroded at these places over a very large surface, and a suppurating wound is thus produced. Around the foreign body the ulceration has a peculiar shape and assumes the fungous type, so that in front of the body is always found a large fold formed by the vaginal mucous membrane, and by the very large fungosities which cover it. On account of the swelling it follows that the two opposite walls of the vagina come in contact with one another in such a manner as to tend to obliterate the cavity of the organ. In some cases the tumefaction and fungosities were so developed that this arrangement has been very completely realized. Bérard has reported the case of a pessary which had remained in the vagina for twenty-five years, and which had finally produced almost complete obliteration. Instead of the normal vagina there only remained a cul-de-sac, which communicated with the remainder of the cavity and the foreign body by a small opening situated in the upper part. This part becomes especially prominent, and perhaps the efforts of defecation and the attempts of the patients are not indifferent in this respect. This is the direct opposite of what occurs at the close of normal labor.

The fungosities are very strongly developed when the foreign body is situated at the fundus of the vagina, and I will soon have occasion to refer to some errors to which they may give rise. When the foreign body is hollow, like pessaries or certain glasses, the fungosities penetrate into the orifice, which is left free, and contribute still more to the illusion.

The examples of perforation are relatively numerous; sometimes they involve the bladder, urethra, and rectum separately, sometimes at the same time. Upon compiling these observations it is found that the latter variety is least frequent. In Deneux's case, the perforation of the recto-vaginal septum had been produced by the stem of a ball-pessary. The crown was found to be retained by the vegetations; they formed a mass which was very similar to a cauliflower excrescence, and scarcely permitted the body and branches of the pessary to be touched in two places.[1] The mechanism of these perforations from gangrene is extremely simple. The vaginal, urethro-vesical, and rectal mucous membranes are continuously compressed for a long time between the foreign body on the one hand and the bony wall of the pelvis on the other. This results in localized sphacelus, which terminates in the slow formation of a loss of substance and an artificial communication between the bladder, vagina, and rectum.

Observation by Laroche.—Pessary.—A peasant woman, fifty-six years old, had been affected with prolapsus of the uterus for a very long period. After having neglected the disorder for nearly sixteen years, she consulted, in 1808, Janin, who applied an ivory ball-pessary, and advised her to remove it from time to time in order to clean it. The fear of hurting herself during this little manipulation, the carelessness of the majority of these country people, and probably the fear of paying the surgeon a few additional fees, caused her to forget the pessary and leave it in place. For four years she worked in the vineyard and felt no distress; during this time the pessary was bent backward. At the end of eight years she began to experience temporary difficulty, at times in passing urine, at times in going to stool. She remained in this state for three years. Finally, having yielded to the disease, finding a continual increase in the difficulty and pain which she had in passing fæces, and sometimes also in micturition—convinced, moreover, that a portion of the fæces escaped through the vulva, and a prey to the most disgusting uncleanliness, she again sought the surgeon. Janin found the upper part of the pessary bent backward, and more than half of the staff had penetrated the rectum, in which it could be distinctly felt. The first attempts at removal failed. In accordance with the advice of Percy and Villermé, incisions were made with a bistoury in order to disengage the pessary from the fragments which held it. After the operation the patient was able to walk a good quarter of a league in order to return home. The fæces gradually resumed their ordinary course, and at the end of a month only a small fistula remained.

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[1] Journ. gén. de méd., 1822, T. LXXVIII., p. 197.

The half of the staff which was in the rectum was covered with irregularities of a black color, very fetid, and covered with shining crystals. The portion lodged in a fold of the vagina was covered by a stony incrustation, which had, at its lower part, a slightly convex facet an inch in length (Journ. gén. de méd., 1822, T. LXXVIII. p. 200).

Schmuecker has related a case similar to the preceding one. The pessary was withdrawn at the end of ten years, and the patient recovered with a perforation of the rectum.

The proximity of the pubis, its shape and arrangement, sufficiently explain the fact that urethral perforations are the most frequent. When once formed, the fistulæ increase in size so that the communication may become very large. The passage of fluids and other substances is usually the rule after these perforations, but this does not always happen, and Dupuytren has reported a case in which, despite two large perforations of the rectum and urethra produced by an old pessary, the urine and fæces had never escaped through the vagina. This passage usually takes place, especially with regard to the urine, which flows more readily than fæces, and the patients find themselves afflicted with one of the most terrible infirmities. As a rule it is not until this period that they seek assistance. More than one woman has fallen a victim to this hideous carelessness or false shame, which prevents them from applying to a physician. Witness the following case, which is interesting from more than one point of view:

Observation.—Tin cup in the vagina.—Death.—A young girl, eighteen years old, was brought to the Hôtel-Dieu of Orleans, in a condition of terrible marasmus. She complained of intense pains in the abdomen, and of constant diarrhœa. The only information which could be obtained from this girl, who bore on her face the stamp of idiocy produced by the habit of masturbation, was that she had complained of the same sufferings since May 14th. She died the day after her admission to the hospital, and before she could be examined. At the autopsy the interior of the vagina was found to contain a hard, thin body, shining like metal, which, traversing the diameter of the organ, prevented it from entering farther. Upon separating the labia minora, the end of a slightly flattened tin cup could be distinguished, the orifice being turned forward and downward. This irregularly oval orifice was partially concealed by the perineum, against which it rested and which it pushed forward. This body could not be extracted until the symphysis pubis had been cut. The bladder was then opened: it contained five calculi, situated in pouches formed by the hypertrophic muscular layer. Upon following the urethral canal, it was found to have been cut at a distance of two centimetres from the meatus urinarius by the upper border of the cup, which pressed it against the posterior surface of the pubis, so that the urine, falling into the vagina, flowed upon the cup. All the surrounding tissues were gangrenous and infiltrated with oxide of lead. (Bull. de thérapeutique, T. XXXIV., p. 314).

If the surgeon does not interfere in order to remove the foreign body,—the cause of all the accidents,—death will occur sooner or later from marasmus, or in consequence of grave complications like peritonitis, abscesses or nephritis. In a case reported by Bagard,[1] of Nancy, a pessary produced strangulation of the rectum. The cause was not recognized until the autopsy.

Some complications have been noted during the presence of the foreign body; these are: hemorrhages caused by ulcerations and fungosities, metritis and metro-peritonitis, cystitis and rectitis. We must also add phlegmons of the pelvis and abscesses of the iliac fossæ.

After the preceding remarks it will suffice to note the grave functional disorders produced by the prolonged presence of the foreign bodies in the vagina. On the part of the urinary secretion, I will refer to the alteration of the urine, retention followed by incontinence, either from overflow or on account of the perforation. On the part of the rectum, obstinate constipation is at first observed; this only disappears in order to give place to an uncontrollable, purulent diarrhœa, resulting from perforations or changes in the mucous membrane of the rectum. Finally, to these accidents must be added the disturbances of the menstrual function, which is very much interfered with by the obstruction of the vagina. In old women, who have forgotten the introduction of a pessary, this inconvenience is not present. But in younger women, pains and the entire group of symptoms of uterine retention, metritis and metro-peritonitis, are manifested at each menstrual epoch. These accidents rarely reappear, either because the function is less thoroughly effected, or because the general health, which is gradually affected, produces at first dysmenorrhœa, and finally, complete amenorrhœa.

2. *Long foreign bodies.*—I know of no example of long and pointed vaginal foreign bodies which have remained for a long time in the canal, because they rapidly produce fatal accidents of perforation or pass into the cellular tissue or abdomen. After having remained harmless in the cellular tissue for a longer or shorter period, they may make their way into a loop of the intestines or form a fluctuating tumor under the skin of the groins or hypochondria.

Observation.—A foreign body, introduced into the vagina, passes into the abdomen.—Extraction.—Death.—A woman, aged twenty-eight years, being surprised by some one entering her room as she was introducing a cedar-wood brush into her vagina, seated herself in order to conceal the act in which she was engaged, and the stick of wood was suddenly pushed through the posterior wall of the vagina into the peritoneal cavity. Two loops of intestines were undoubtedly perforated, as was shown later on autopsy; nevertheless, no extravasation occurred into the peritoneum. Plastic exudation agglutinated the intestinal loops to one another around the foreign body which perforated them, and was situated in such a position that one end rested in the concavity, and the other, directed upward and forward, had pierced the abdominal wall between the umbilicus and Poupart's ligament, nearly under the skin.

Erichsen performed extraction eight months after the accident. He assured himself that the brush was fixed in its middle portion by some of the tissues which it traversed; finally, that the point, which was felt on abdominal palpation, was engaged in the anterior wall. The patient was anæsthetized, and the bladder and the rectum were emptied; an assistant then introduced a finger into the rectum and pushed the posterior end of the brush upward and forward, so as to make the point project as high up as possible. An incision was made upon this projection down to the fascia transversalis, in which the point of the brush, made of blackened lead, was fixed. Erichsen enlarged the opening in the fascia, pushed back the tissues, and exposed to view a very long piece of the brush, which he seized and extracted with the aid of a pair of forceps. The brush, which was five and a half inches long, had a fæcal odor. Nevertheless, neither gas nor intestinal contents escaped through the wound, which was closed by two stitches and adhesive plaster. On the following day, a severe attack of peritonitis developed, and the patient died on the fourth day after the operation.

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[1] Marquet : Traité de l'hydropisie, 1770.

At the autopsy, the peritoneum was found to contain gas and a few ounces of turbid serum, of a blackish color and containing plastic exudations. A mass of small intestines, which were bound together, was found half way between the umbilicus and pubis, to the right of the median line. Two loops of intestines were found perforated, each in two places. The bladder, uterus, and rectum were healthy; but, upon examining the vagina, a depressed cicatrix was found in the superior posterior cul-de-sac to the side of the uterus. The brush had undoubtedly penetrated through this opening. (Med.-chir. Trans., V. XXXIX., p. 15, and Dict. Encyclop., art. Abdomen.)

In truth, the history of these bodies belong, as much to those of the abdomen as of the vagina, but useful information can be drawn from this very rapid passage in the pelvis. This example is not, however, isolated, and presents more than one analogy with the following:

Observation.—Knitting-needle in the vagina.—Abscess.—A woman, twenty-eight years old, a deaf-mute, presented herself at the clinic with an abscess on the right side of the abdomen, which was especially prominent between the spine of the pubis and the umbilicus. A puncture made with a trocar permitted the escape of altered pus and gas. Upon enlarging the incision, and making an exploration with the finger, a somewhat roughened, very thick knitting-needle was felt, and was removed with a pair of forceps. The cavity was quickly cleaned; no fistula; recovery. The needle must have been introduced through the vagina or rectum. This hypothesis was verified by the discovery of a small cicatricial induration in the vagina, on the right side of the neck.

Despite these cases, the history of elongated vaginal foreign bodies is not sufficiently advanced to enable us to do more than quote a few cases which appear to belong here. In Sonnié-Moret's case, death resulted from the introduction of a compass, and was caused by an acute perforation.

CHAPTER IV.

DIAGNOSIS.

A VAGINAL examination can alone give us precise information, but we must also add rectal touch and vesical catheterism as useful adjuvants. If the first enables us to recognize the existence of solid foreign bodies, the latter furnishes very useful data concerning the existence of an urethro-vesical or rectal fistula. Finally, if the touch is necessary in the case of solid foreign bodies, it is absolutely indispensable to examine the vagina in ordinary light with the aid of a speculum, in order to discover the nature of soft foreign bodies like sponges. Despite the apparent simplicity of the diagnosis, very large foreign bodies often pass unnoticed, or have given rise to gross mistakes in diagnosis. That this is so becomes evident when we consider that a wooden spool had remained for twenty-two years (from the age of fourteen to thirty-six), in the vagina of a woman, although both her husbands and the physicians who were summoned to attend to her had not detected its presence! The following is the history of this curious case:

Observation by A. Pearce.—Spool of thread in the vagina for twenty-two years.—Various accidents.—A woman, æt. 36 years, sought advice for a menorrhagia which had lasted ten days, and had produced great prostration, very intense colic pains, and weakness. Upon examination, a body was felt, covered with a fold of mucous membrane, and an inch from the entrance. The patient finally confessed that at the age of fourteen she had herself introduced a spool of thread. She had previously had attacks of peritonitis and hemorrhage. Extraction was performed, and a urethro-vaginal fistula was found. The spool was black; the central canal, through which the menstrual discharge had always passed, was clear.

This patient, although twice married and under the care of physicians, had succeeded in concealing from them the existence of this body, which was three-quarters of an inch long. (Brit. Med. Jour., June 28, 1873.)

The fungosities which surround the foreign bodies, especially sponges, may be mistaken for cancers. The ready hemorrhages, the soft feel, the putrid odor of the secretions,—all the appearances are deceptive; and, in fact, examples of such a mistake are not very rare.

Observation.—Sponge in the vagina simulating carcinoma.—A pregnant woman at full term was examined by a physician, who made a vaginal examination and thought he detected a cancerous degeneration, with prolapsus of the neck of the uterus. Capuron being consulted, and finding that the patient's general health did not correspond with the supposed organic change, made a more careful examination of the parts, and removed a sponge from the vagina. (Vidal de Cassis, T. V.).

The same mistake was made by Richet. Cloquet relates that a woman was treated for cancer of the vagina, and that he removed from her a cork pessary which was incrusted and surrounded by fungosities. Finally, another example has been published more recently.[1]

To record these mistakes is equivalent to pointing out the way to avoid them, and a careful examination will always reveal the true cause of the deceptive symptoms.

In the same way that leeches become fixed in the pharynx, glottis and anus, they may also be present in the vagina, and simulate the most serious uterine affections on account of the hemorrhage, which is the only symptom of their presence. A simple examination with the speculum will prevent us from committing this error; nevertheless this mistake has been made, according to the observation reported by Guyon (1843).

Observation.—Leech in the vagina.—Errors of diagnosis.—Guyon communicated to the Academy of Sciences (1843) the case of a woman who had long been unsuccessfully treated in Bône for a profuse uterine hemorrhage. The flow continued until she changed her residence to Alger. She here came under the care of Lebrun, who also employed several remedies without any success. The woman had become very weak, and he ordered her to make vaginal injections of vinegar and water. Hardly had she made use of this remedy when a live leech, of the variety so commonly met with in the country, fell from the vagina. The hemorrhage ceased at once, and the patient's health was promptly restored.

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[1] Chicago Journal, 1876.

CHAPTER V.

TREATMENT.

IMMEDIATE extraction is the treatment which must be applied in all cases of foreign bodies of the vagina, but the difficulties which are experienced vary greatly according to the different cases. However, the extraction of small or soft objects usually presents no obstacle, and in order to do this it is sufficient to make an examination with the speculum and to seize the body with polypi forceps, calculi forceps, etc.

Observation.—W. Henry Day (Brit. Med. Journ., June 13, 1874), quotes the case of a woman twenty years old, in whom a piece of a glass syringe was extracted from the vaginal mucous membrane. It measured seven centimetres in length, and one in breadth, and the points of the fragment were very sharp. It was braced transversely against the uterine orifice, and had a cutting edge near the vesico-vaginal septum, the perforation of which was apprehended. A speculum was introduced, and, by means of the ring of an umbrella, the piece of glass was removed from the folds of the mucous membrane so that it fell into the speculum and was readily removed.

But matters do not always run so smoothly when it refers to very large bodies, like beer-glasses, goblets, boxes of pomade or preserves, and pessaries, especially when these objects are incrusted, have produced vesical and rectal perforations, and are buried in the midst of a hernial mucous membrane, which is thickened and covered with fungosities. A pessary which has been present for more than twenty or thirty years creates a new pouch in the tissues, and it is very difficult to dislodge it. Nevertheless, we must first resort to simple extraction by making use of special instruments, such as Farabeuf's forceps, and forceps which enable us to move, dislocate, and extract the body. These manipulations must always be performed very cautiously, and the tractions must be continuous and moderate. In Deneux's case, an old pessary was buried in fungous growths, and upon exercising tractions upon the stem it broke. It was not thought prudent to remove the other portion, and death occurred three weeks later.[1] This example should not be followed; if we do not succeed, we must resort to other means. Thus, division of the bodies has been resorted to several times, when they were fragile or capable of being divided. With the aid of a hand-saw or a cutting forceps, the pessaries are divided into two or more fragments through the vagina, rectum, or urethra, if it can be done in the latter with more facility, or they are already perforated. This was done by Dupuytren in the following case:

Observation.—*Extraction by fragmentation of a pessary in the vagina.*—A woman, who had been obliged to wear an ivory ball-pessary on account of an affection of the uterus, presented herself at the Hôtel-Dieu in Paris. This pessary had been allowed to remain for a very long period without withdrawal. One day, as she was attempting to remove it, she broke the large stem from which pass the three branches that support the circle. The body of the instrument remained for several years without causing any annoyance, but pain finally developed, and the patient sought the assistance of art in order to have the body removed. Dupuytren explored the vagina and found that the two lateral portions of the circle were free in the canal, but that the others, the anterior and posterior, were imbedded in the mucous membrane, and could not be disengaged. When the finger was carried into the rectum, a small portion of the circle was found bare in the intestine, and the introduction of a catheter into the bladder proved to the surgeon that another portion had perforated and was laid bare in this organ. Nevertheless, the woman had neither an urinary nor a stercoraceous fistula.

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[1] Journ. gén. de méd., 1822, T. LXXVIII., p. 198.

The extraction presented very great difficulties. Dupuytren at first attempted to saw the circle in the rectum, but was unsuccessful. Then, with the aid of a very solid pair of forceps which he had constructed (each bit had a dull cutting surface which came in contact with another), he broke the circle in the rectum and vagina, and withdrew the two portions of the foreign body, which presented three kinds of teeth, the remains of the branches upon which the ring was supported, through each of these cavities. This woman recovered without manifesting any subsequent distress. (Journ. gén. de méd., T. LXXVIII., 1822, p. 206.)

When the foreign bodies are fragile and can be extracted, we must divide them or cut the perineum, in order to facilitate extraction. The fragmentation of fragile foreign bodies is dangerous, if care is not taken to guard the walls against the pieces. Pieces of pasteboard (Bijon of Quimperlé), metal, wood, etc., are used for this purpose. They are divided by means of forceps, scissors, or hammers.

Observation.—Extraction of a glass tumbler.—Bijon was called to a woman, aged thirty-eight years, living in the country, who had introduced a glass tumbler into the vagina. This had been done five days previously, and the woman could neither urinate nor go to stool; furthermore, the glass was broken.

Examination revealed an ordinary glass, grooved along a part of its length, and situated almost transversely in the cavity of the vagina. The bottom was situated deep to the left and above, and so far from the arch of the pubis that the end of the finger could not go around it. The mouth of the glass, on the contrary, was more accessible to the touch, and was readily found to the right and below. The tip of the finger found upon the edge a cutting notch about three centimetres in diameter. The shape and position of this break, which was only found on the vaginal surface, left no doubt that it was the result of unsuccessful attempts at extraction.

Upon introducing the finger through this notch, the glass was found half filled by a portion of the recto-vaginal septum, which here formed a sort of hernia. Thus, the bottom of the glass pushed against the bladder above and to the left; it had compressed the cervix and crushed the urethra in such a manner as to render every attempt to introduce the catheter temporarily impossible or dangerous, while inferiorly the break in the glass threatened to perforate the intestine. Rectal touch showed that this danger was imminent. It was therefore unwarrantable to attempt to seize the foreign body at the bottom in order to pull it forward and extract it in the same direction in which it had entered. An attempt was made to perform a sort of version through the rectum in order to bring the mouth of the glass opposite the vaginal orifice; but, at the first introduction, the surgeon severely wounded his finger upon one of the sharp angles of the break. Bijon, then introducing the finger as deeply as possible into the notch in the glass, gradually pushed back the intestinal mass. With the other hand he held a pair of forceps, which he gently introduced according as the ridge was reduced. When he was certain that the mass which had filled the glass was evacuated, and that the blade of the forceps had passed to the outside of the glass, this blade was firmly held there. In order to protect the intestine, he slid a slightly stiffened piece of pasteboard, a little larger than three fingers, well rounded at the end, and carefully oiled, along the forceps, following the external surface of the instrument. It then became necessary to begin the same operation a second time. A little pressure was then made above upon the bottom of the glass, and the urethra, which had been previously compressed, was then disengaged; a powerful stream of urine was discharged spontaneously, and the bladder was emptied. In order to protect the urethra against injury from the notch, it became necessary to introduce two additional sheets of pasteboard, one above and the other to one side, so that a solid wall protected the entire surface of the vagina. Simple extraction could not be attempted because the forceps could not be closed. The surgeon then determined to break the glass with forceps which had cutting blades. When the foreign body was sufficiently diminished in size, he extracted it in its entirety. An examination of the pasteboard showed how useful this novel apparatus had been. The sheet which protected the rectal wall was deeply cut in two places; it had been almost transfixed by one of the corners of the broken glass.

A large injection of water was thrown into the vagina, and a careful examination showed that the vaginal walls were intact.

The intestines resumed their functions; abundant evacuations immediately occurred, and the woman recovered at the end of a few days. (Bijon of Quimperlé: Gaz. des hôp., 1868, p. 339.)

We read in an English journal that a woman had a piece of a syringe in the vagina. A surgeon being called, succeeded in removing it by protecting his index finger with cloth and forcing it into the end of the syringe, as in a glove.[1]

Finally, incisions have been employed on several occasions in order to disengage a portion of the foreign body. Thus, Holmes reports that a metallic pessary was so firmly embedded that it became necessary to incise the perineum in order to facilitate its extraction. In a similar case Lisfranc made a posterior vulval incision. The final treatment is extremely simple. The patients must at first be allowed to rest for some time, the claims of cleanliness being insisted upon, and pre-existing complications and perforations must be relieved, at a later period, by the appropriate operations. The results of these measures are greatly aided by nature, which, after the extraction, has a great tendency to close the fistulæ.

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[1] Brit. Med. Journ., 1874, T. XXII.

FOREIGN BODIES OF THE UTERUS.

SOME scattered cases in literature, the majority of which were observed in women, who, for criminal purposes, had recourse to these manipulations in order to rid themselves of the products of conception, constitute all our actual knowledge concerning foreign bodies of the uterus. Strictly speaking, we might somewhat enlarge the plan of this chapter by including the study of the effects of the foreign bodies introduced into the uterus for surgical purposes during pregnancy, so that, by the side of criminally produced abortion, we must place abortion produced for therapeutic purposes.

But if we consider what actually occurs, we find that the surgeon merely makes a wound or rupture of the membranes by means of instruments or catheters *à demeure*, and the foreign body is then withdrawn. Criminal abortion, on the contrary, has several times given rise to the prolonged detention of the body which has been employed.

It is very difficult to understand the factors which cause these instruments to be lost. In this respect we must divide the cases into two categories, according as the objects are manipulated by outsiders—usually by midwives, who are not afraid to hook them upon the child—or according as the patients themselves, with the same end in view, but with much greater lack of skill, endeavor to introduce the foreign bodies. A rubber catheter has been found broken in the uterus after having passed through the neck. In another case an individual had introduced a catheter *à demeure* into the uterus for the purpose of producing an abortion, but the catheter slipped out, and the patient thought it would be well to push it in deeper, whereupon it disappeared.

The few cases of foreign bodies of the uterus which I have been able to collect all refer to objects which have common characteristics. They are long in order to be able to be introduced deeply, not large in order to enter the neck, and pointed in order to perforate the membranes, or at least to detach them; the majority are rigid. Brignatelli's case, quoted by Lisfranc, referred to a chicken-bone, concerning the origin of which many idle theories were adopted. We may say the same of the hair-pin observed by Meschede, which may have come from the bladder, intestines, or rectum, or may have been introduced through the vagina. An observation reported by Lisfranc referred to a piece of a catheter.[1] An abortionist, whose misdeeds are mentioned in Crouzit's observation, used a long seton-needle which measured no less than six inches in length. He lost it one day in a gravid uterus.

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[1] **Clinique de la Pitié, T. II., p. 527.**

The wooden spit which Maisonneuve[1] removed from the uterus of a woman thirty years old, was 122 millimetres long, pointed at one end and twisted at the other. Finally the patient, whose history is given in an English observation, had used a gum-elastic catheter, which entirely disappeared.

All these bodies are characterized by their length, which is so great that they can never be entirely lodged within the uterus unless the latter is distended by a fœtus of five or six months. This fact is not an immaterial one, as it explains several complications which are possible during the presence of the body, on account of their very great diameter. In fact, they no longer remain even in the cavity of the organ, but are embedded in its walls, which they finally perforate, either partially or entirely. However, the manipulations employed in the introduction often produce these perforations, as is evident from the following case observed by Zuhmeister.

Observation.—Twig of a tree in the uterus.—Some time after the first manifestations of pregnancy, a woman used a branch of a tree in order to penetrate the uterus, and in order to keep it there she pushed it back so firmly that it was embedded in the region of the kidneys. This twig, which was six inches long and as thick as a goose-quill, remained in the pelvis for five months without the patient's knowledge, and finally perforated the rectum. (Schmidt's Jahrbücher.)

When the body was engaged in the uterus at the moment of extraction it was almost always not free, and special manipulations were necessary in order to extract it. Cases referring to foreign bodies of the uterus are so scanty that many points in their history are still very obscure. Their migration and displacements are still unknown, but the uterine contractions enable us to understand, up to a certain extent, the perforation of the uterus. This is not true, however, of the mechanism of their passage into the pelvis. Moreover, an object which is even as soft as a catheter has been known to pass into the peripheral cellular tissue.

The accidents produced by the prolonged detention of these bodies vary greatly according as the body has perforated the inner wall, or has remained in the organ. A piece of reed, which was tolerated during the first period of its introduction, only became disquieting at the beginning of the next menstrual period. The presence of an irritating body also produces uterine contractions, which are not indifferent in the genesis of these perforations. A few years ago, a German surgeon withdrew the steel capsule of Roser's hysterophore from the uterus of a patient who had been treated for several months for an uterine affection. This large foreign body had not produced any serious symptoms for four months. (Berl. klin. Wochr., 22, 1878.)

Symptoms of metritis are usually present, to which we may add those of peritonitis when a portion has passed beyond the walls. Both of these affections, occurring shortly after an abortion, seriously threaten existence; and in several observations we find that the patients, overcoming their fears and shame, come to seek the aid of the physician. Thanks to proper treatment, the grave initial symptoms may subside; but, if the cause persists, they reappear at the end of a longer or shorter period. This is well shown in Maisonneuve's case.

Observation.—Wooden spit, twelve centimetres long, in the uterus.—In 1840, a woman, age thirty years, a laundress, entered the Hôpital Saint Louis, in Maisonneuve's service. At the age of twenty-eight she had had a miscarriage at the fifth month of pregnancy, followed by grave symptoms of metro-peritonitis. She was compelled to enter a hospital, in which a diagnosis was made of hyperplasia of the anterior part of the organ; she entered the hospital a second time for similar symptoms. A general run-down condition and considerable emaciation were observed; there was a wan, yellowish color of the skin, dejected expression, painful digestion, hectic fever occurring every night, and dull, steady pains in the loins and hypogastrium. The latter region was occupied by a hard, irregular, nodulated tumor, slightly painful to pressure, filling the pelvis and prolonged into the right iliac fossa. On the vaginal side the os tincæ was found to be slighty opened, permitting the finger to enter a little; then the neck and body of the uterus were lost in an irregular, hard, and perfectly immovable mass. With the speculum the separation permitted something whitish to be seen, which had, with the stylet, a wooden feel; the object could be circumscribed by passing the stylet forward and backward. Maisonneuve thought that a foreign body was embedded in the walls of the uterus, and first attempted to cut it with long scissors, in order to extract each end separately, but he was unsuccessful. He then engaged the two teeth of a long polypus forceps, the one in front the other behind, and made the foreign body yield a little on moderate traction. The carefully continued tractions succeeded in disengaging one end without much pain, and it was then easy to extract the entire body. It proved to be a wooden spit, 0.122 m. long, pointed at one end and twisted at the other. The relation which existed between the introduction of this piece of wood and the abortion was thus established. For eight days there was a relapse of the symptoms; they then ceased, but a tumor remained which was undoubtedly due to the old adhesions between the uterus, bladder, rectum, etc. The general health was gradually restored. (Gaz. méd.)

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[1] Gaz. méd., 1841.

There are two known cases of concretions which have formed around foreign bodies in the uterus. The first one, reported by Brignatelli, is not surprising, and is explained by the alteration of the uterine secretions under the influence of the irritation; but the details concerning this curious incrustation are wanting. In the second case, the foreign body was situated in the cervical portion.

Observation.—Piece of a reed in the uterus.—A woman, while resorting to secret practices, broke a piece of a reed in the uterus. No symptoms developed at first, but violent pains appeared at the following menstrual epoch; they resembled labor-pains. The uterus was increased in size; this could be readily determined by the aid of the vaginal touch and abdominal palpation. The orifice of the neck of the uterus appeared to be closed. The neck was hypertrophied as in pregnancy of the second or third month. Careful, methodical and repeated examinations showed, in the centre of the neck, a very slight projection, which presented great consistence.

The surgeon introduced the speculum, removed the mucus with forceps and charpie, but nothing came into view. Upon raising the anterior lip of the os tincæ with a grooved director, a foreign body was noticed which hardly showed itself outside of the cavity in which it was enclosed. Extraction was made with a flat-toothed forceps by producing rotatory movements. The body slipped twice, but the third attempt proved successful. Black, tarry clots of blood, like lees of wine, then escaped. Recovery.

The body was a reed, three centimetres long. Its external surface was found incrusted with very hard calculous matter. (Journ. de méd. et de chir. prat., T. XIV., 1848, p. 70.)

From the fact that I have been able to find, in medical literature, only one case of death from a foreign body in the uterus, we must not conclude that this termination is entirely wanting. On the contrary, it is probable that, in many accidents of this kind, it has occurred from peritonitis, perforation, metritis or purulent infection, and that the cause of death has been attributed to these affections. In Meschede's case, death slowly occurred from marasmus, after inflammatory symptoms.[1]

Observation.—Hair-pin in the uterine cavity.—Widow Z——, aged forty-one years, entered the hospital at Swetz. Upon admission, general weakness, hystero-epilepsy, chronic rheumatism. Contracture of the leg on the thigh, spinal pains, tenesmus.

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[1] Fr. Meschede: Deutsche Klin., 32, 1873.

Prolapsus uteri reducible in the beginning, then irreducible in consequence of painful spasms of the organ.

Formation of an abscess around the anus; fistula operated successfully; dysentery; death. The only data given concerning the autopsy are with regard to the peculiarity of the uterus, which contained an ordinary hair-pin; it was roughened and eroded in places. The chronic inflammation of the uterine mucous membrane proved that the pin had been situated in the cavity for a long time. The author attributes the contractions of the organ and the general convulsive phenomena to this foreign body.

In order that perforation should not be immediately followed by disastrous accidents, it is necessary that it occurs slowly at some part of the organ which is not covered by peritoneum—that is to say, at a portion of the fundus. The perforation has occurred three times in nine cases, and always with the same termination—that is to say, the formation of a purulent collection or phlegmon of the pelvis.

In only one case was the pus directed toward the iliac fossa and groin, while in the other it had been directed toward the cellular tissue of the ischio-rectal and thigh. I will report in full these two curious cases in which we find grave symptoms followed by a successful termination. In one case only thirty-five days had elapsed since the accident when the foreign body was extracted from the groin; in the other the catheter had remained in the pelvis for twenty months.

Observation.—Abortion produced by the introduction of a seton-needle into the uterus.—Escape at the groin.—Crouzit was called to a young girl in whose uterus a seton-needle had been introduced for criminal purposes. When he arrived the fœtus had been expelled; it was about three months old, and had been wounded by the instrument. But the latter, as well as the afterbirth, had not been removed. Examination did not reveal the place in which the needle was fixed; it was even impossible to extract the placenta on account of the constriction of the neck of the uterus, which was irritated by the manipulations to which it had been subjected. The surgeon thought that he could feel the needle on abdominal palpation. The placenta was expelled at the end of two days, and the patient had very grave symptoms. Eleven days afterward she began to feel pain in the inguinal region, in which an elevation formed on the thirty-fifth day; the pains became very intense. The needle then gradually approached and appeared on the seventy-ninth day. It was six inches long. Recovery. (Arch. gén. de méd., 1re série, T. III., 1823.)

Observation.—Case of recovery after extraction of a foreign body buried in the female pelvis.—Detention for twenty months.—A young woman, thinking herself pregnant, consulted an abortionist, who, it is supposed, attempted to introduce an elastic catheter into the uterus. The patient, finding that the catheter slipped out when she went to stool, endeavored to push it up farther, whereupon it disappeared to the great fear of the abortionist. Two or three months later the patient complained of great pain in the left hip, thigh, and leg. This gradually subsided, and the symptoms did not grow worse even when a large abscess formed near the left hip. A sound being introduced through a fistula, which was directed toward the tuberosity of the ischium, led to the side of the rectum. It did not communicate with the abscess, which had opened, and at the bottom of which the foreign body was not found. Upon examining the vagina with the finger, a transverse bar was discovered, which could also be felt in the rectum, and which was extracted through the latter by means of forceps, from a pouch extending to the lateral walls of the pelvis. It was an elastic catheter. The catheter, in passing into the cervix, had been pushed through the posterior wall, and in the next manipulation had been pushed still farther. Hence a phlegmon of the pelvis and perimetritis, giving rise to the abscesses of the hip and perineum. (The Lancet, Oct. 31, 1874.)

The bladder, which has not been the seat of perforations, possesses, perhaps, a certain immunity, and this is very naturally explained by the antero-posterior direction of the foreign bodies introduced, which tend to be directed toward the rectum rather than anteriorly.

Unfortunately, the phenomena produced by uterine foreign bodies are so vague and ill-defined that their diagnosis is difficult, if we are not aided by the confessions of the patients. All the primary or secondary symptoms are very natural after simple abortion, and a foreign body is not needed to explain their presence. It is only by investigating the condition of the parts by means of sight and touch, by carefully exploring the entire pelvis, that we can discover the foreign body, as was done in Maisonneuve's case. The diagnosis is even difficult when the confessions of the patient draw attention to the uterus. We must also inquire as to the position occupied by the body, and its situation, data which can only be obtained after a minute examination.

After they have been discovered, foreign bodies of the uterus should be extracted if they are still contained in the organ. From Lisfranc and Maisonneuve's cases of extraction we may judge of the difficulty which such a grave operation sometimes presents, and which threatened the life of the patient in the relatively simple case of the former surgeon.

Observation.—Piece of a rubber catheter in the uterus.—I was called to a woman, who, for illicit purposes, had introduced a large elastic catheter into the neck of the uterus; it had broken five centimetres from the end, and this piece had entered the organ. Symptoms of metritis were already manifest; I asked for the instrument which had been used. and found that it was not intact. I introduced a speculum and carefully cleansed the neck of the uterus, but could see nothing; I then slipped a straight catheter into the dilated internal orifice. It had hardly entered a distance of a few millimetres before I distinctly detected the presence of the foreign body, which was removed with forceps. The extraction was very painful, and a few drops of blood escaped. The inflammation extended to the peritoneum and was arrested by mercurial inunctions. No symptom of pregnancy was manifested. The patient, who thought herself in the third month of pregnancy, showed nothing which led me to suspect the presence of a fœtus. (Lisfranc: Clin. de la Pitié, T. II., p. 537.)

The fruitless attempt at section which Maisonneuve made, in order to remove a large piece of wood, would have been useful if the shears or forceps had been introduced higher up and sufficiently opened in the neck of the uterus in order to cut the foreign body, especially if it were placed transversely. In cases of necessity, on account of the swelling of the neck and the impossibility of acting with instruments, we must not be afraid to incise the neck laterally from within outward.

When the foreign body has left the uterus, we must be very cautious and not practise extraction if we run the risk of involving the peritoneum or of producing a phlegmon of the pelvis, the progress of which it will be impossible to arrest. It is better to wait until a tumor has formed in some locality, the groin or perineum, and then open it. Examination of this part will always lead, after a longer or shorter period, to the discovery of the foreign body, which it is necessary to extract with great care, cutting it if one end does not present spontaneously.

FOREIGN BODIES OF THE FEMALE URETHRA AND BLADDER.

CHAPTER I.

ETIOLOGICAL CONSIDERATIONS.

WITH the study of foreign bodies of the female urethra and bladder, we enter almost entirely into the domain of the results of masturbation and lewdness. More than nine-tenths of the cases belong, in fact, to this category, and are observed in females varying from fourteen to thirty years of age, and addicted to the solitary vice. The examples of foreign bodies introduced into the urethra, beyond the age of forty years, are very rare. Nevertheless, Cusco has extracted, at the Hôtel-Dieu, a bougie of white wax, carefully rounded at one end, from the bladder of a woman fifty-two years of age. It was incrusted at one end and had remained in the bladder for five weeks. The extraction was readily performed through the urethra, which was naturally very much dilated. The therapeutic etiology, which is so important when it refers to foreign bodies of the male urethra, is almost entirely absent in woman, because, on account of its dimensions, its breadth, and much shorter length, this canal is less subject to pathological affections. It is only under exceptional circumstances (before or after operations, during confinement), that it becomes necessary to leave catheters *à demeure* in the bladder, and the properties of the urethra explain the facility with which they fall into this organ. Finally, I must add to this group of causes the malice which probably accounts for the presence of foreign bodies, like needles, in very young children of the ages of two, three, or four years. Insanity also plays some part, and we must perhaps call upon this cause in order to account for the abnormal relapses of the introduction of foreign bodies which have nothing in common with those employed by masturbators in procuring the artificial sensations of pleasure. Thus, Cruveilhier reports that a woman had been cut for a pebble which she had introduced into the bladder through the urethral canal. Some time afterward it became necessary to remove, by hypogastric cystotomy, a second pebble, larger than the first. The patient died in consequence of the operation. The lunatic under Sonnie-Moret's observation, to whom reference has been made so frequently, had also, in a suicidal attempt, pushed a small package of cut iron wires into the urethra.

Observation.—Desault, says Maunoir, cut a woman for the third or fourth time, who had introduced into the urethra small stones which had grown larger with time; the imposition was finally discovered. This woman had thereby excited great interest and had received numerous gifts. (Thèse de concours: Montpellier, 1812.)

Apart from these various sources by which foreign bodies enter from without, there is another which is peculiar to women and results from the proximity of the uterus. Among the large number of foreign bodies of the bladder are found pieces of bone, debris of fœtuses, or misshappen bony masses, hairs, etc., which are due to the rupture of a dermoid cyst of ovarian or uterine origin into the bladder. In order to be complete, we must also add to these causes the accidental communications between the intestines and the bladder, injuries, etc.

CHAPTER II.

NATURE OF THE FOREIGN BODIES.

THE habits of women and their sedentary pursuits explain why the majority of the bodies which have been extracted from their urinary organs are objects which they usually employ in the toilette or in their work. While the list in man is much more varied, it remains more uniform in woman, with this slight difference, however, that the objects are somewhat larger than those used by men. The type of foreign bodies in him would be, for example, a pencil, the twig of a plant, and that in woman would be a needle-case. The somewhat different dimensions of the canals will sufficiently account for these slight differences. In order to convince ourselves, it will suffice to glance over the following table.

Foreign bodies of the female urinary organs.	Foreign bodies which have come from without through the natural passages.	Of therapeutic origin.	Various female catheters.
		Of erotic origin.	Etui, ivory whistle. Hair-pins. Ear-picks. Ordinary pins, stick of sealing-wax. Needles, rye-straw. Bodkin, wax candle. Pencils, pen-holders, small ivory spindle. Pieces of wood, etc. Handle of mustard-pot, etc. Handle of tooth-brush, fork, etc. Lady's stiletto.
		Of various origins.	Pins. Package of iron wire. Pebbles. Pieces of brick.
	Foreign bodies which have come from without through accidental passages.	Abnormal communications with the uterus, intestines or pathological products; injuries: bone, hair, bullets, fruit-pits, etc.	

All these foreign bodies, especially those which have been introduced for erotic purposes, are characterized by the predominance of one diameter over the other. Almost all of them are long, somewhat large, regular, smooth, and have polished surfaces in order to avoid all lesion of the organs. We never find any which are very large, while the small and ovoid bodies result, in the majority of cases, from accidental communications between the bladder and adjacent organs, such as misshapen bone or fœtal debris. The first will be the object of special study, while the latter only concerns the subject indirectly. Moreover, they present the same symptoms and methods of treatment.

In a general way, their length is not very considerable, and they differ in this respect from those in the male canal. The longest ones are pencils ten or twelve centimetres in length, ivory needles, pieces of wood, etc., in the group of erotic origin. Female catheters do not measure less than ten or twelve centimetres, and several examples of this kind have been observed.

There are very great differences among them with regard to shape and regularity, but the end which is first introduced into the canal is always blunt or polished. Certain metallic pen-holders indicate this type very well. Some are pointed at one end, and we are unable to explain this precaution in any other manner than that it is intended for the purpose of producing greater irritation. Moreover, and these cases are not very rare, certain girls attach a wire, the use of which it is not difficult to determine, to the middle or to one end of the object of their passion. Thus, Steel withdrew from a woman's bladder an ivory etui with a wire tied around its centre.[1] A young mother used a pointed stick attached to a wire, etc. This arrangement has been noticed in some foreign bodies in males, and I believe that we must regard it as the effect of precaution or of fear, or perhaps of a previous experience.

The most irregular foreign bodies are undoubtedly double hair-pins which, being introduced by the convex portion, pass entirely into the canal or into the bladder. They present two very dangerous irritating points, which may be embedded in any place and add greatly to the development of serious complications. Ordinary needles present the same characteristics to a less extent.

Among the numerous considerations to which the study of the properties of these foreign bodies gives rise, we must also add their flexibility or rigidity, which are especially interesting from a therapeutic point of view. Some, in fact, can be readily bent, like pins; others will break immediately, like needles or sealing-wax; others, finally, will resist any force on account of their rigidity (iron, ivory). Those which are made of wood, like pencils, or are of vegetable origin (stems of plants, straw), may be readily cut; hence the notion of a peculiar mode of treatment which has been adopted by some surgeons.

It is very rare to find multiple foreign bodies, and these cases refer almost entirely to objects introduced into the bladder in consequence of an abnormal communication; such are the bones derived from a fœtus, the teeth from a dermoid cyst, locks of hair, etc.

Almost all the cases of multiple introduction betoken a perversion of ideas. There is a very curious specimen in New York, representing a collection of 67 pieces of brick, which were extracted on several occasions from the bladder of a negress, who was accustomed to introduce them into her urethra, after having oiled them, for purposes of simulation. Their weight varied from a drachm to half an ounce.

A few years ago an analogous case, but which referred to gravel, was observed in the Paris hospitals.

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[1] **Guy's Hospital Rep., 1853, p. 316.**

CHAPTER III.

SITUATION.—MOBILITY.—FIXATION.

ALL parts of the urethral canal and bladder may be the site of the foreign bodies; sometimes they are situated in the canal, sometimes in the urethra and bladder at the same time, and finally, they may be entirely in the latter cavity.

There are no very satisfactory reasons in explanation of these various positions, which may moreover follow one another, and hair-pins have been known to fall into the bladder, despite their irregularities, as well as a piece of wood or an etui. Nevertheless, some long bodies do not readily enter, at least in the beginning, and remain engaged in the neck for a certain length of time. It is more rare to find one end projecting outside the urinary meatus.

As in man, foreign bodies which have fallen into the bladder may occupy the most variable positions, according to their shape, length, density, and irregularities. Those which are heavy, regular, and not large, occupy by preference the lower part; while some, which are lighter than urine, float on its surface. Certain fruit-stones, beans, cork, and pieces of wood, act in this manner. When the bodies are long and rigid, they assume the most varied positions in the bladder, are placed transversely (Delens, Nélaton), obliquely (Marjolin), or are buttressed by their two ends against the walls of the bladder, which they keep apart. A pencil composed of two parts was divided in the bladder, and the two pieces were placed obliquely crossing one another.[1]

In such cases it is rare that one end is not somewhat embedded in the wall, under the influence of the vesical contractions which, taking a point of support upon the rigid and pointed body, perforate the mucous membrane and fix the body in a definite position. Metallic and pointed bodies, like pins and needles, often present this arrangement, and the implantation may take place in all parts of the bladder, in the upper as well as in the lower segments. In a young girl who was operated upon by Guyon, a twisted and warped hair-pin was fixed into the upper wall of the bladder. This was also true of a girl operated on by Billroth, whose observation I report.

Observation.—Hair-pin in the bladder.—A girl, aged eighteen years, had suffered for a week from pains in the vesical region; the urine was sanguinolent at times, cloudy in the last few days, and left a thick sediment. The patient confessed that she had been addicted to manipulations of her genitals with the rounded end of a hair-pin. The pin had slipped from her hand and had probably entered the bladder. With a probe-pointed bistoury Billroth dilated one side of the urethral canal so as to introduce the little finger of the left hand. With his hooked finger he pushed forward the blunt extremity of the pin, which was fastened obliquely into the upper wall of the bladder, and performed extraction with the aid of forceps. No incontinence of urine followed, and three days later the latter was clear. The pin had already begun to be incrusted. (Schmidt's Jahrbücher, T. CXX., p. 209.)

"SWALLOWING" OF FOREIGN BODIES.—As in man, so also in woman, there is a peculiar physiological phenomenon which tends to make bodies that have been introduced into the urethra pass into the bladder. The mechanism is more obscure in the latter, and, on account of the shortness of the canal, is much more rapid. This is proven by authentic examples, such as that of Chapman, quoted in the works of A. Cooper, in which a metallic female catheter had glided into the bladder, during the few seconds which the operator consumed in taking a basin which he had placed on an adjacent table. This is not the only illustration of such a rapid disappearance, which cannot be explained, as in man, by retraction after erection. We must of necessity admit that a sudden contraction of the canal carries the foreign body inward, and makes it pass into the bladder. But such an explanation will not suffice to account for the phenomenon, and we can merely note the fact without explaining the reason. Moreover, this progression presents some peculiarities in woman. It is not always continuous, and it is not rare to find bodies, which have been left in the urethra, project into the neck and bladder, but not penetrate any farther. On the other hand, hair-pins, the progression of which in one direction is very readily explained, pass almost immediately into the bladder.

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[1] Bull. de la Soc. de chir., 1865.

CHAPTER IV.

PRIMARY ACCIDENTS.

The primary accidents appear at extremely variable periods after the introduction of the foreign body, according to its situation, shape, length, and irregularities.

Those which are small and blunt only produce trifling symptoms, and the patients are not much disturbed if they are situated in the bladder. This is not so when they remain in the urethra, because they then produce considerable disturbance in the passage of urine, which is so much greater, as the irritation due to the presence of the foreign body causes swelling of the canal. The meatus itself takes part in this tumefaction.

Observation.—Hair-pin in the urethra.—Various symptoms.—A young domestic, fourteen years old, experienced intense pain in the genital organs (January 27, 1875). Retention of urine; general symptoms; very painful tenesmus. On the 4th a midwife made an examination, but found nothing. On the 5th the patient took to bed, and could retain the recumbent position only at the cost of violent pain. The general symptoms persisted; the bladder distended. The patient then referred to the loss of a hair-pin, a circumstance which coincided with the beginning of the symptoms. Examination revealed a sacculated dilatation of the anterior wall of the vagina; the orifice of the urethra was inflamed and painful to the touch. A foreign body was felt to be lodged in the canal, and could not be removed with the fingers. The forceps permitted the removal of a hair-pin 0.065m. long. The patient being unable to urinate, catheterism was resorted to. Improvement during the night; disappearance of the general symptoms. On the following day the patient rose from bed and urinated with facility. (Wien. med. Presse, 6, 1876.)

The mechanical discomfort experienced in the emission of urine produces functional disorders, which are evinced by pain, retention, or even incontinence. The pain is sometimes extreme, and results much more from the abnormal distention of the bladder by the accumulation of the fluid than from the local irritation. It has also happened that the physician in attendance was able to measure an enormous quantity of urine contained in the bladder.

Krongold observed a case of this kind. A hair-pin, which was contained in the urethra, produced excruciating pains in the abdomen and bladder, and very marked disturbances of micturition; the meatus was swollen. The extraction of the foreign body was made with the aid of forceps, and the use of the catheter permitted two and three-quarters litres of urine to escape.

But the retention is not always complete, and the patients may, for a certain length of time, expel a little urine at the cost of unusual efforts and great pain. The power of the bladder gradually diminishes, and the fluid, continuing to accumulate, finally escapes, drop by drop, from overflow. Retention is followed by incontinence on account of the same affection, and from a similar mechanism.

When the foreign body is entirely within the bladder, the mechanical phenomena are much rarer and give place to symptoms of cystitis. The desire to urinate appears very frequently and is unavailing, or terminates, perhaps, in the escape of a small quantity of urine, which is sometimes slightly sanguinolent, but not yet cloudy. It is especially toward the end of micturition that the pains appear, and are reproduced at the same time that the patient experiences an incessant desire.

To what are the pains and cystitis due? Undoubtedly to the irritation of the mucous membrane produced by the irregularities of the foreign body, which becomes so much more irritant because the bladder, toward the close of micturition, contracts more strongly upon the object. In some cases the patients experience acute, cutting pains upon walking or impressing the least movement to the pelvis.

Finally, the retention of urine, when the foreign body is situated in the urethral canal, may produce intense reaction. In one case, in which an etui produced a mechanical retention and incontinence with overflow, insomnia occurred, with fever, and a grave, adynamic condition.

In conclusion, the initial symptoms are not very grave, unless there is retention, in which case horrible pains force the patients to seek assistance. If the foreign body is situated in the bladder, and is less irritating, it will be tolerated for a long time, and will not attract attention except after the development of secondary accidents.

CHAPTER V.

SECONDARY PHENOMENA.—TERMINATIONS.—COMPLICATIONS.

INCRUSTATION.—FORMATION OF CALCULI.—The majority of the foreign bodies which are present in the female bladder or urethra become covered, after a little while, with calcareous incrustations, the successive and slow deposit of which terminate in the formation of nucleated calculi.

The mechanism by which these concretions are produced is in all respects the same as that in foreign bodies of the male urinary organs, and I would merely refer to what has been said on that subject, except to call attention to some slight differences in the shape and development of these calculi. Thus, ovoid concretions are very rare because the majority of the foreign bodies are long, and the deposits form by preference in the middle of the body, especially if the two ends rest against the walls or partially traverse them. Almost all of them belong to the fusiform type, and are penetrated by the needle, pen-holder, etc. The representation of a few specimens of this kind will convey a correct idea of their shape and size. They sometimes present a very curious arrangement, which is equally well marked in calculi without a nucleus. I refer to a circular depression which corresponds to the point where the neck of the bladder presses on the calculus, when the foreign body is partially within the urethra. This arrangement was present in a case observed by Passaquay.

The fusiform calculi may attain a very considerable size. Patissier[1] withdrew, from the urethra of a woman fifty years old, a calculus weighing more than an ounce, formed in the canal around a double pin which had been introduced three years previously. In another case reported by Jobert, a pencil had entered the bladder, and an enormous calculus had formed at one end, while the other, which was free, had perforated the bladder and vagina. The foreign body was no less than nine centimetres long. A girl, whose history is reported in Hybord's thesis, had in her bladder, for a long time, a hair-pin, which finally became calculous. At the period of its removal the two pointed ends of the double needle alone projected beyond the calculous mass, like the two horns of a snail. On account of their shortness, the examples of bent foreign bodies are much rarer in females than in males. But, nevertheless, there are some which develop upon hairs derived from dermoid cysts that have emptied into the bladder and which have become the nuclei of calculi.

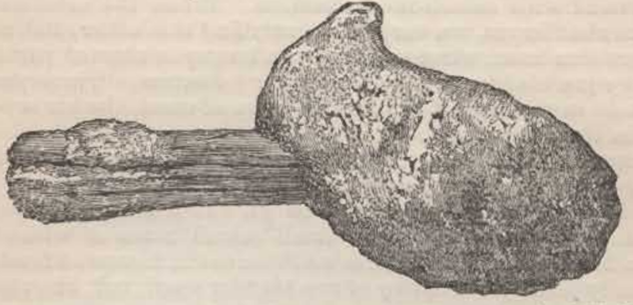

FIG. 72.—Calculus formed at the end of a pencil which had remained in the female bladder for a long time. (Bull. de thér., 1855, p. 261.)

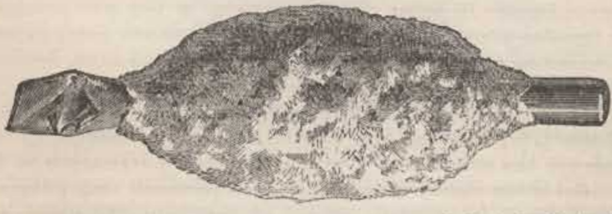

FIG. 73.—Fusiform calculus formed around a metallic pen-holder (after Bouisson).

The fusiform shape, like that of the calculus removed by Bouisson

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[1] Dict. des sciences médicales.

(Fig. 73), is the most common; we also find the club-shaped arrangement, especially when the bladder has been perforated by one end of the body.

Observation.—Fusiform calculus around an ivory needle.—The Leipzig Transactions (1700) contain the history of an ivory needle which had been introduced into the female bladder. One end had gradually perforated the walls and had produced an abnormal projection in the hypogastrium under the abdominal walls. Supra-pubic section was performed nine weeks after its introduction, and a club-shaped vesical calculus was removed; the other end was smooth and polished.

Both ends of a piece of straw removed from a woman's bladder were found covered with calculous concretions. When the calculus has become somewhat larger, we very frequently find that other small secondary concretions also form, which remain for a longer or shorter period, or are expelled by the bladder shortly after their formation. These phenomena were present in the case of a calculous piece of wood, the history of which is found in Hybord's thesis.

Moreover, a girl twenty years old, who had a nucleated calculus in the bladder, has been known to pass a secondary calculus weighing 2.80 gr., followed by a third one weighing 4.50 gr. In a woman whose bladder contained a wooden etui, several small calculi, some of which were as large as a hazel-nut, were found, in addition to the incrusted foreign body. They usually occupy the cavity of the bladder itself, but, like those in the male bladder, they may be concealed in an accessory pouch which the foreign body has hollowed out for itself in the wall, or perhaps in a cavity formed at the expense of the interstices of the columns. This arrangement was especially observed in a girl nineteen years old, who had an iron needle in the bladder, and whose history will be reported in the remarks on treatment.[1]

Hitherto I have intentionally omitted speaking of the time necessary for the formation of these calculi; there are very great variations in this respect. Sometimes the calculus has only arrived at its maximum development after the lapse of several years, while in other cases abundant deposits have been noticed a few days after the introduction of the foreign body.

Finally, the composition of these concretions is almost the same as that of vesical calculi in man. The following is the composition of one which had formed around the handle of a tooth-brush introduced into the bladder:[2] urate of ammonia, xanthine, phosphate of lime, ammonio-magnesian phosphate.

Symptoms of Calculi formed around Foreign Bodies.—In the beginning the symptoms of the calculi are often masked by other accidents, which are the consequence of the prolonged irritation or wounds of the walls. All these causes unite, in fact, to produce very painful cystitis, with frequent desire to urinate, oozing of sanguinolent urine, sometimes even hemorrhage, as in Marjolin's case.[3] The sufferings produced by the contact of the foreign body with the inflamed bladder are sometimes so great that the patients make outcries and assume the most singular positions. One woman observed by Monteil de Mende, and whose history is reported by Foucher, had half of a paper of needles in her bladder; she was unable to lie in bed except with the lower limbs flexed on the abdomen, or seated as if crouched on the ground. When such serious symptoms appear, those which mark the beginning of the incrustation are obscure. But if the tolerance is very great, we can better observe the lithic formation, which is always manifested by abnormal pricking and tingling in the region of the urinary meatus, by more frequent desire to urinate, dull pains during micturition, and especially slightly cloudy urine at the outset, which then becomes slightly ammoniacal, decomposes very rapidly, and after a little while leaves at the bottom of the vessel a thick layer of calcareous salts mixed with pus or muco-pus produced in consequence of the cystitis. During this time, the general condition is still but little affected; it only begins to feel the effects of the local affection during the final period. In proportion as the calculus increases in size, the symptoms become aggravated and the pains become more severe, the urine escapes guttatim, the stream is sometimes intermittent, and may be suddenly suppressed.

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[1] Acad. des Sciences de Paris, 1878, Obs. 5.

[2] The Lancet, 1874.

[3] Soc. de chir., 1865.

The points of the foreign body produce acute pain after each act of micturition. The following case reported by Richet is a very characteristic example:

Observation.—Vesical calculus formed around a hair-pin in a woman twenty-two years old.—Urethral section by Dubois.—Secondary incontinence of urine.—Recovery.— "A seamstress, æt. twenty-two years, entered la Pitié, on May 20, 1868, for an uterine affection. On exploration of the bladder, the sound discovered a calculus.

The patient was chlorotic, menses had always been regular; three years previously she had had a child, and since her confinement had experienced acute pains in the kidneys and abdomen. Six months previously she noticed that she was urinating blood, sometimes pure, sometimes mixed with urine; at the same time the pains increased, but they were never so acute as when the patient had walked a little, and especially when she rode in a carriage. Since that time she urinated five or six times a day, and each act of micturition was accompanied by the most intense sufferings. Finally, she noticed that the stream of urine was often arrested suddenly, and then reappeared a few seconds later.

Vaginal examination showed a very large, round, hard projection, which depressed the anterior wall of the vagina toward the fundus of the bladder; upon moving it slightly with the finger, the projection was found to be movable and independent of the vesical walls. The instrument gave a dry, sonorous sound. Richet found the following dimensions with the lithotrite: 0.035 m. to 0.040 m. in one direction, and 0.030 m. in another. The calculus was consequently ellipsoid and slightly flattened upon its surfaces. Irritable bladder; the urine, which was clear at the beginning of micturition, contained, at the close of the act, a certain amount of mucus, and even of muco-pus, indicating a very serious inflammation of the mucous membrane of the bladder. The patient gave no positive data concerning the origin of the affection.

Operation performed June 4th; anæsthesia. After having introduced a grooved director into the bladder, Richet introduced upon it Frère Côme's simple lithotome; being certain that it had passed the neck of the bladder, he removed it by bending the handle toward the anus. It was arrested at number 55. Escape of urine and blood. Richet introduced his finger, and upon it a pair of forceps, with which he grasped and removed the calculus; this was not done without some difficulty. This calculus appeared in the shape of an ellipsoid, the larger extremity of which presented a circumference of 0.050 m.; the smaller was 0.025 m. and was surmounted by two points formed by the ends of a hair-pin. Upon section, the calcareous concretion was found to be deposited around the foreign body in the form of concentric layers. The chemical analysis showed that it was composed of phosphate of lime; the weight was 42 grammes.

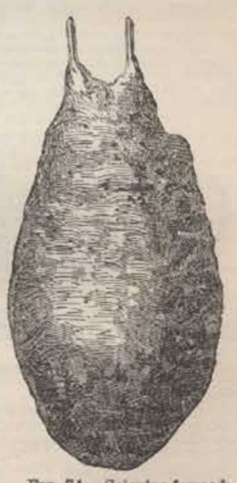

FIG. 74.—Calculus formed around a hair-pin, the ends of which are visible.

The after-effects were not very simple, on account of an incontinence of urine which continued for six months. At the end of this time she left the hospital entirely recovered, being able to retain her urine. (Thèse d'Hybord : Paris, 1872.)

The initial symptoms continue; rapid emaciation, loss of energy, continual insomnia, incessant desire to urinate, are superadded. The ammoniacal urine irritates the genito-urinary organs and the thighs, and, when it is passed in considerable quantity, it is earthy and purulent.

Disorders of menstruation, which are hardly ever absent in any cases, appear from the beginning. Dysmenorrhœa, lasting for several months, is followed by almost complete amenorrhœa, acute pain, and periodical colic.

Finally, a condition of marasmus develops with genito-urinary and the most grave general complications, such as cystitis, more rarely nephritis or pyelo-nephritis, fever, chills, an adynamic condition, peritonitis, and death. However, these affections, whose issue is almost always fatal in these cases in man, are somewhat less disastrous in woman; and, as we shall see in the following paragraph, more than one way is left open to the foreign bodies to leave the bladder, even after they have become nucleated calculi.

By the side of these secondary accidents we must also place the cases of prolonged retention which terminate in incontinence of urine from overflow, but none the less produce very severe internal disorders—hæmaturia, nephritis, uræmic symptoms, and, as in a very curious case reported by Commandré[1], an eruption of urticaria.

Observation.—Needle-case introduced into the urethra, and successfully removed after being present in this canal for a month.—During the month of June last, a girl, aged twenty-three years, of a strong constitution, presented herself in my office, and, without any circumlocution, asked me to remove a needle-case which she had introduced into the urethral canal.

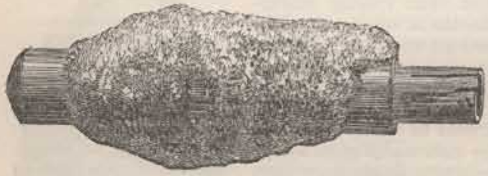

FIG. 75.—An etui which had fallen into a woman's bladder and became the centre of a calculus. (Dupuytren's Museum.)

The foreign body was situated very deeply. The eye could distinguish nothing at the external orifice, which was of a bright red color, as in urethritis; but the finger being introduced into the vagina enabled me to feel the object along the whole length of the canal, which was very sensitive, especially in its deeper parts toward the neck of the bladder.

The patient stated that the etui had been in this situation for forty days, the time at which she had begun rearing silk-worms in the country. All her efforts to remove it, which she had made a thousand times, were fruitless. During this long month, she had suffered from constant insomnia and incessant desire to urinate, with great pain during micturition.

There was, in fact, mechanical retention of urine from the presence of the foreign body, which closed the canal throughout its entire extent. The urine only escaped from overflow, or after unusual effort. An eruption of urticaria covered the entire body and produced intolerable pruritus, which caused the patient at least as much torment as that produced by the foreign body. In the midst of all these sufferings the unfortunate girl was doing work of the most fatiguing kind for her sex. She gathered the leaves of the mulberry, passed the nights in tending to the worms, and in fact performed work which tries even those in the best of health.

I have said that the finger, on being introduced into the vagina, enabled me to distinctly determine the presence and position of the object in the canal ; but all the manipulations made in this way, in order to extract it, did not succeed in producing any displacement. The canal, which had been excessively distended, appeared to have formed adhesions with the needle-case, and accompanied it in all the movements which I endeavored to impress upon it.

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[1] Bull. de thér., 1867, p. 369.

A sound introduced into the canal came in contact with the object at about two centimetres from the orifice. The etui had been introduced by its base, and the cover had been removed. It was not difficult to pass one blade of a pair of forceps into the interior of the case, and the other externally, but now the difficulties began. The etui carried with it the canal, to which, as I have stated, it was adherent. I had no assistant, and was unable to obtain one. The patient begged me to operate upon her without assistance. Her brother was waiting at the door of my office, and she desired to conceal her condition from him.

Firmly grasping with the left hand the forceps which held the etui, I drew it forcibly upward and outward, while I pushed back the folds of the canal with the index finger and thumb of the right hand. The manipulation was very painful to the poor girl, who endured it bravely; but as soon as the end of the case appeared outside of the meatus, it appeared as if the interior of the canal was excoriated, and the etui escaped, accompanied by a stream of very fœtid, bloody urine.

The case was 0.070 m. long and 0.0175 m. in diameter. It was covered over its entire external surface, with the exception of about half a centimetre toward the base, by a saline concretion 0.002 m. to 0.003 m. in thickness, which was undoubtedly urate of lime. The interior was empty, and only presented a thin layer of white matter upon its walls. The lower end, which was not covered with a saline concretion, appeared to me to have been cleaned by the contractions of the neck of the bladder, in which it had been engaged.

This injurious action affects not only the urine, but it may also interfere with important functions—for example, parturition. The literature presents several cases of severe accidents produced by the disastrous coincidence of an incrusted foreign body in the bladder, and pregnancy. The following is one of the most interesting:

Observation by Ducasse.—Calculus formed around a pin in a pregnant woman.—Delivery.—Death.—A girl had introduced a large pin into her urethra. The foreign body soon entered the bladder, and, the pains being relieved, no surgeon was called. The girl had, in some sort, forgotten the circumstance, and soon after became enceinte. During pregnancy the pin became covered with salts and became the nucleus of a calculus which was sufficiently large to form an invincible obstacle to pregnancy, by constricting the antero-posterior diameter of the pelvis. The use of the forceps became necessary in order to extract the child, but the contusion of the organs during parturition was so great, and the walls of the uterus and bladder had been so severely injured, that abdominal inflammation followed the delivery, and gave rise to several foyers of suppuration, which rapidly caused death.

The autopsy revealed the cause of all these disturbances; an enormous calculus had formed in the bladder, the nucleus of which was formed of the pin which had been introduced. (Jour. de méd. et de chir. prat., 1843.)

This is not the only example of the coincidence of pregnancy and foreign bodies of the bladder. Nélaton's patient, whose history will be found in the chapter on treatment, died from the accidents following extraction.

Almost all the complications which develop during the presence of foreign bodies in the bladder are the result of wounds of the mucous membrane, made by the irregularities of the object. All those which are local are of a traumatic or inflammatory character, and terminate in the perforation of the bladder. This is a frequent complication in pointed bodies, which have been present for a long time, and it is consequently observed also in foreign bodies which have become nucleated calculi. The mechanism of the perforation is very different, according as it is effected by a very narrow and pointed body which is capable of readily passing, or by an irregular, blunt, and rigid object. In other words, needles do not perforate the bladder by the same mechanism as pencils, etuis, hair-pins, etc. The vesical contractions engage the first mentioned in the direction of their points, and in this manner they may penetrate into the peritoneum or into the cellular tissue which surrounds the inferior and lateral portions of the bladder. Judging from the few cases of this kind which are reported in literature, the latter path is the most frequent; it is quite possible that more than one case of peritonitis has been the result of an unknown perforation. In two instances the foreign body has travelled outside of the bladder into the labium major.

Observation.—Needle in the bladder, which protrudes at the labium major.—Ruggeri preferred to leave a needle in the bladder, fearing that, if he performed cystotomy, the forceps would imbed the needle in the walls of the bladder. It is not uninteresting to know that, in this case, the needle projected soon after to the inside of the labium major, whence it was readily extracted without danger. (Gaz. méd., 1840.)

Observation.—Abscess of the labium major produced by a needle.—A little girl, aged 4 years, had presented since the age of two years all the symptoms of a calculus; at the outset she had had violent colic. An abscess formed at one of the labia majora, and a needle was extracted. (Med. Essays and Observ., T. IV., 16, p. 297.)

It is evident that whenever a calculous concretion has formed around a needle, the passage is not so readily effected as in Ruggeri's case. But perforation is not always followed by the passage of the foreign body, which may be retained in the bladder by one end that has become the nucleus of calcareous incrustation. As it is very difficult for such a movable and irritating point to remain outside of the bladder for a long time without producing accidents, inflammation develops in the peri-vesical cellular tissue, collections form and protrude at the abdomen, groins, perineum, or labia majora. The following is an illustration:

Observation.—Supra-pubic abscess.—Extraction of a nucleated calculus.—A needle, three inches long, became imbedded in the walls of a woman's bladder. In consequence of the incomplete perforation, an abscess formed above the pubis. After it had been opened, the orifice was dilated, and when the foreign body had been discovered and the opening in the bladder dilated, the calculus which had formed around the head of the needle was crushed and extracted. (Journ. de méd., T. L.)

The process varies when the foreign bodies are hard and blunt, like catheters and pencils, but the results are the same. I must remark, in the first place, that the foreign bodies have, on account of their situation, weight, and perhaps also on account of a natural tendency, a disposition to perforate the vesico-vaginal or urethro-vaginal wall, which is the weakest of all. In this respect we must consider simple and double perforations. Long and solid foreign bodies rest by their two ends against the walls, and produce a pressure which, when continued for a long time, terminates in local gangrene from compression, and secondarily in perforation.

As this phenomenon is produced very slowly, and as the peri-vesical cellular tissue has time to establish adhesions even before the perforation is complete, an abscess or phlegmon forms on each side, which may open in both groins and give rise to fistulæ, if the foreign body was situated transverse. A precisely similar case is found reported by Morgagni. It referred to a knitting-needle, which produced two abscesses in both groins, and later, two fistulæ.

If, on account of its shape, the foreign body cannot pass outside of the bladder, as in a tipped female catheter, the collection will be changed into an interminable fistula. This very curious result is well demonstrated by the following illustration; in this case, however, the pus was carried toward the ischium and hip.

Observation.—Case of perforation by a female catheter which emerged at the buttock.—"A woman, twenty-five years old, complained of painful and involuntary evacuation of urine, which escaped from the urethra, together with blood and puriform matter. She also passed purulent urine from a fistulous ulcer which was situated in the buttock, about the middle of the gluteus major. She was in a condition of marasmus. Upon sounding her, Ford found a foreign body in the bladder. Upon examining the ulcer he learned from the woman that it contained a piece of detached bone, which often appeared outside of the skin, but seemed to be frequently withdrawn with considerable force. Ford discovered with a stylet that this body was free in the fistulous sinus and attempted to remove it. When the foreign body was withdrawn for half an inch, it was impossible to remove it any farther, as it was retained by a strong contraction of the muscles. Upon examining it more closely, Ford was astonished to find that the foreign body was evidently the blunt or closed end of a silver catheter. Upon being questioned, the patient stated that she had been attacked with great difficulty of micturition in the third month of her last pregnancy, and that this had been relieved on several occasions by the use of the catheter. A surgeon who lived in the vicinity was summoned, and had caused her very great pain by catheterizing her, and from that time she was unable to rise from her bed without experiencing great distress. The pregnancy went on to full term, and she nursed the child, although extremely feeble. It was evident that all the symptoms were due to the presence of the catheter, and when her strength had improved, Ford performed extraction through the urethra. He dilated the urethra, introduced forceps, but experienced some difficulty, because the handle of the instrument was at the pubis and the blunt end at the ischium. Upon pulling on the beak through the ulcer in the buttock, its direction was changed and the instrument could then be removed. The catheter was covered with a slight incrustation. The fistulous ulcer in the buttock healed in a few days, and recovery occurred within a month." (Med. Facts and Observ., V. I., p. 96, London, 1791.)

By the side of these curious cases must be placed the perforations of the vesico-vaginal wall, which are much more numerous, and which do not usually appear until a long time after introduction. This rule is not without exceptions, as is proven by the following case published in a Spanish journal:

Observation.—Two-pronged fork in the bladder.—Perforation of the vesico-vaginal septum.—Extraction.—Recovery.—A young girl, eleven years old, had introduced an instrument into the bladder, shaped like a two-pronged fork. Several physicians were called, among others Aravaca, who found the child suffering from pain in the bladder, especially during micturition. An examination enabled him to discover a metallic foreign body, which extended from right to left, and from above downward. The body could not be moved, and it was concluded that it had engaged in the walls of the bladder. A very viscid solution was injected, in order to dilate the bladder and allow the body to be seized, but these attempts failed. The vagina only admitted the little finger, and its exploration furnished no information.

During the following days the patient only suffered at the end of micturition, and the pains were accompanied by the escape of a few drops of blood. On the fifteenth day she experienced difficulty in moving, and felt a sensation of weight during micturition and defecation. On the twentieth day, the mother summoned the first physician and informed him that she had felt the fork. In fact, she seized one prong through the vagina, forcibly drew upon it and the other prong, and, after prolonged and vigorous tractions, the fork made its exit; further tractions expelled it altogether. The urine flowed through the vagina for a time, but it had resumed its natural course at the end of six days, and recovery occurred. (Aravaca: El siglo medico, 1865.)

In almost all the cases, the end which is incrusted with calcareous salts remains in the bladder while the other is found in the vagina. The perforation sometimes occurs at the neck of the bladder or urethra, but the mechanism of its formation is always the same, viz.: from the continuous pressure of the pointed extremity. The difference between this variety and the preceding is that there is no abscess, and that the urinary fistula is established almost immediately.

Under the influence of the vesical contractions and the advance of the affection, the fistulous ulceration gradually enlarges, and the calculus partially engages in the vagina. Cases have been observed in which it has passed almost entirely into this organ.

Philips communicated to the London Obstetrical Society a case in which a pencil had been in the bladder of a girl, eighteen years of age, for six months, and one end of which had perforated the vagina. She had incontinence of urine for several months; the other end of the pencil was found in the bladder, covered with phosphatic concretions. In two cases reported by Morgagni and Zampollo, the needles succeeded in making their way outside by perforating the urethro-vaginal septum. In Jobert's case,[1] a pencil had also passed through the fundus of the bladder, for we cannot admit the traumatic etiology claimed by the young patient, who did not speak of her accident until six months afterward. One of the most curious cases of this kind is undoubtedly the one which is found quoted in Morand's treatise:

Observation.—Ivory needle in the bladder; escape through the vagina.—Urinary fistula.—"A girl of Parma, named Dominica, whose history and depraved habits are described by Morand (Obs. IX.), had introduced into the bladder an ivory-headed needle as long as the finger. Intense pains; she was only able to pass her urine guttatim. For five months the girl concealed her trouble; but finally, becoming emaciated and fever developing, she went to a surgeon, who, having introduced a finger into the vagina and felt a hard mass there, discovered the end of the needle with an instrument, removed the stony mass which surrounded it, and thought that he had made a good operation. But the symptoms continued, and another surgeon introduced a catheter into the bladder, which was ulcerated and torn on the side nearest to the vagina; he felt a hard body. He ordered a large amount of oil in order to relieve the acute pain. A few days afterward the stone, which had formed around the needle, appeared at the entrance to the vagina through the opening made in the bladder, and was extracted with the hand, without the aid of any instrument. Recovery, with the exception of persistent incontinence of urine, and very frequent inflammation of the parts."

I have intentionally omitted speaking hitherto of the perforations produced by bodies which, like hair-pins, are bent on themselves and present two points. They produce perforations much more quickly; they do not progress appreciably, because the two points are often separated and oppose their penetration. Thus, one point may be fixed in the anterior vesical wall, while the other is in the vagina. The importance and gravity of such an arrangement is evident with regard to treatment. In fact, if we exercise traction on one end of the needle, not only will we not succeed in removing the body, but we will bury the other branch still farther, and may thus cause very serious disorders. One case of this kind was observed by Spessa,[2] and Chopart mentions an analogous one.

VARIOUS TERMINATIONS.—It is useless to speak of the tolerance of the bladder, as it is only relative and does not last more than a few months. Complete tolerance has never been observed.

If foreign bodies of the bladder are not withdrawn by the surgeon, they can have no other termination than elimination by the unaided forces of nature, either through natural or artificial passages, or death within a longer or shorter period.

Spontaneous expulsion, although it is favored by the natural dimensions of the canal and its shortness, is not frequent, and examples of it must be regarded as curiosities. Sometimes it refers to bodies which have not undergone calcareous incrustation, sometimes to calculous bodies. In the latter case the exit occurs only after a truly difficult labor. However, the proportion of cases of expulsion is far greater in woman than in man. Thus, among 386 cases of foreign bodies collected by Denucé, spontaneous expulsion occurred in 37, which are apportioned as follows: males, 14; females, 23. When the foreign body is in the bladder, spontaneous expulsion includes two periods: in the first, the body engages in the canal; in the second, it is expelled. The first period is rarely spontaneous, and is the effect of pure chance when it is produced; but this is readily understood, as the usually long body is placed more or less obliquely or transversely, becomes fixed, etc. The majority of cases of expulsion refer to bodies which are situated in the urethral canal. A child, four years old, passed an oval stone weighing more than half an ounce; it was transfixed by a sewing-needle about one inch long, the ends of which passed a few lines beyond it.

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[1] Bull. de thérapeutique, 1855.

[2] Gaz. méd., 1840.

Another illustration was communicated to the Surgical Society by Aubry. He had under his care a peasant-girl, twenty-two years old, who had introduced a piece of wood into the bladder. Several fruitless attempts were made to remove the foreign body, whose nature and origin were unknown. One day it appeared spontaneously at the meatus urinarius, and was readily extracted.[1]

As soon as they have engaged in the canal, they give rise to violent efforts of contraction on the part of the bladder, and if the force of the latter is not exhausted by long detention, they will be much more efficacious, as the canal in the female is dilatable. Benedetti has transmitted a very interesting observation of a woman who had a needle incrusted in the bladder, and who passed it one day through the urethra during efforts at defecation.

The elimination through artificial passages occurs by means of abscesses, which open more or less remotely in the groins, abdomen, labia majora, etc. I have reported some examples in the course of this work. We may also consider the very frequent perforation of the vagina as the first stage of natural elimination. The observation of the girl of Parma, referred to by Morand, is a true example of this type of expulsion.

If the body remains for an indefinite period, death occurs sooner or later, either in consequence of complications of the local condition, or on account of the hectic fever and marasmus. The most serious local affections are cystitis, pyelo-nephritis, nephritis, urinary infiltration, perivesical abscesses, gangrene, peritonitis, etc.

Death from general disturbances develop, as in man, in consequence of a peculiar cachexia. Morgagni[2] mentions several cases of death. In one of them death was caused by a bony needle incrusted with calcareous salts, and gangrene of the bladder was found on autopsy. Civiale has also mentioned a similar termination occurring in a woman who had an ivory needle in the bladder. She died from exhaustion, after terrible pains.[3]

This termination would be much more frequent, if art did not interfere to relieve the patients of the cause of their sufferings.

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[1] Bull. de la Soc. de chir., 1865.

[2] De sedibus, Ep. 42, p. 25.

[3] Traité de l'affection calculeuse, p. 84.

CHAPTER VII.

DIAGNOSIS.

HERE, as in man, two very distinct cases are presented: either the data concerning the origin of the foreign bodies are definite, or they are obscure or absent. It happens in rare cases that a mother, without waiting to be questioned, asks the physician to relieve her daughter of a foreign body which she has in the bladder. Morand cites a case of this kind. Rarer still are the women who frankly confess the occurrence, as the girl did, who, having reached the limit of her endurance, entreated the surgeon (while her brother was waiting at the door) to remove at once an etui which she had introduced some time previously while practising masturbation. In most cases the history only serves to mislead the physician. But he must take into consideration the concocted stories which the relatives and patients relate with inexhaustible prolixity.

As in man, we must accept everything, and must only regard two things, viz., the foreign body and the symptoms. All the rest is trivial. Moreover, the physician may, without fear of error, set aside the question of origin, which is almost always the same. At times the symptoms, nature of the pains and condition of the urine, put us on the track of the diagnosis, and enable us to discover the real and hidden origin of the symptoms.

We must then carefully explore the genito-urinary organs, palpate and percuss the abdomen, investigate the menstrual disturbances, practise vaginal and urethral touch, and, if necessary, rectal touch. When the finger enters the urethra with facility, there are many chances that the girl is addicted to mechanical masturbation. Finally, the surgeon must catheterize the patient, using a silver catheter. If the foreign body is metallic, it may transmit a metallic sound, as happened to Bouchacourt; in all cases the instrument gives the well-marked sensation of a foreign body. A vaginal examination and exploration of the bladder with the aid of a catheter, performed at the same time as abdominal palpation, may sometimes render good service.

The use of the sound is not always sufficient, and does not give such accurate data as the finger with regard to the situation, position, etc., of the foreign body. It is also advisable to explore the bladder with the index finger, if this is possible. In order to do this, preliminary dilatation is effected with the aid of an aural speculum (Passaquay, Monteil), or of the ring finger followed by the index finger.

By utilizing the great dilatability of the urethra we may very readily, especially in persons who have previously enlarged the canal by their manipulations, examine the bladder, recognize the position of the body, and base a rational and certain treatment on these valuable facts.

In conclusion, we must consider the clinical history when it is given, the account of the symptoms, and especially mediate and immediate exploration.

Nevertheless, mistakes are sometimes committed, but the patients cannot long impose on a surgeon who carefully examines the organs. The following observation is perhaps unique of its kind.

Observation.—Foreign bodies in the bladder.—Mistaken for pregnancy.—A young girl, seventeen years old, who had lost her courses since Feb. 8th, was admitted to "The Hospital for Women," as being enceinte, in the month of June. The general appearance was good, the abdomen more developed than usual in girls. The breasts were large, and the hard nipples were surrounded by a dark, well-marked areola, and strewn with hypertrophied follicles. The mammary gland did not contain any milk. Since the cessation of the menses, there had been incontinence of urine at certain times, and the latter was only passed in small quantities. At certain periods there were repeated attacks of vomiting. Urine cloudy, thick, alkaline, albuminous, and exhaling a very marked odor; sp. gr. 1035. The patient had never passed any gravel. Despite the above-mentioned signs of pregnancy, palpation and percussion showed that the uterus had not increased in size. The introduction of a catheter into the bladder enabled the physician to recognize the presence of a large calculus. The finger could be introduced through the urethra into the bladder, whose firmly contracted walls prevented the mapping out of the calculus. The patient was anæsthetized with chloroform, the calculus was seized with a lithotrite, but only the superficial layers could be crushed. They surrounded a very hard foreign body, one end of which was engaged in a cul-de-sac which corresponded approximately to the inner third of Poupart's ligament. The foreign body could only be extracted through the urethra after considerable difficulty; it was the handle of a tooth-brush, a full-sized representation of which accompanies this observation (Fig. 76). The girl was at first unwilling to give any explanation, but she afterward pretended that she had on several occasions employed this instrument in order to relieve retention of urine, and that it had one day been carried into the bladder.

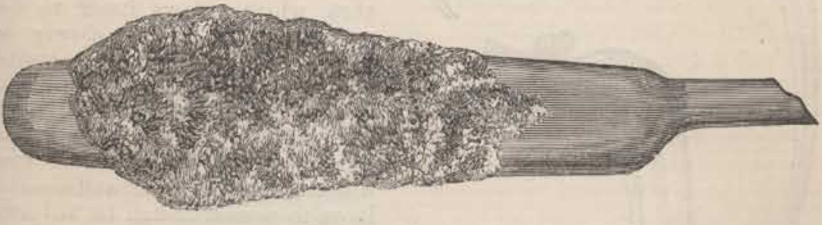

FIG. 76.—Handle of a tooth-brush, covered with calcareous deposits, found in a young girl's bladder. (The Lancet, 1874.)

Everything went on well after the operation. The menses returned at the end of twenty-five days for the first time in seven months, and have been regular ever since.

The calculus contained urate of ammonia, xanthine, phosphate of lime, and ammonio-magnesian phosphate. (The Lancet, Jan. 24, 1874. Thomas Whitehead.)

CHAPTER VIII.

TREATMENT.

Two great methods include all the measures which have been employed in order to extract foreign bodies of the urethra and bladder. These are extractions through the natural and artificial passages. Thanks to the ready dilatation of the urethra and its shortness, the method of extraction through the natural passages continually tends to become generalized, and the indications for extraction by cystotomy are becoming more and more restricted. As a large number of the operations are almost the same as in man, I will merely indicate their mode of employment.

§ 1. Extraction through the Natural Passages.

After having carefully determined the position of the foreign body, it is necessary, before performing extraction, to make a certain number of indispensable preparatory manipulations, viz.: dilatation of the canal, displacement of the foreign body if it is fixed, injections, etc.

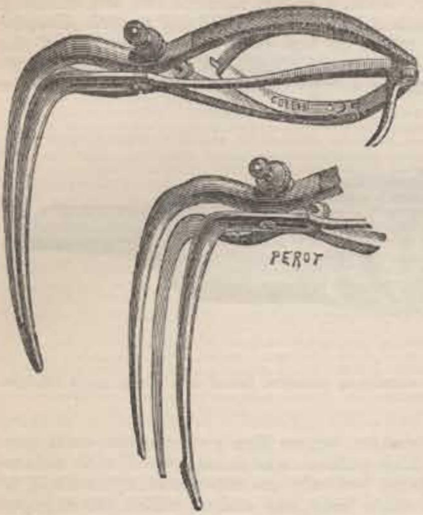

Fig. 77.—Dilator for the female urethra.

Dilatation is by far the most important, and, in fact, constitutes a special method. It is based upon the elasticity of the urethra, which allows itself to be readily dilated, either slowly or suddenly, until it easily permits the passage of even very large bodies. It is sufficient to recall the example of the woman observed by Mayer, in whom the urethra had become sufficiently large to permit coitus to be performed in this organ in the absence of the vagina. Dilatation applied to treatment of foreign bodies in the female bladder had been employed in France in 1675; Molinetti employed it in order to extract a needle made of bone; Lachèze, in 1751, to remove an ear-pick. More recently it has been extolled and perfected by Tolet, A. Cooper, and, at the present time, dilatation counts numerous partisans, among whom Bryant in England is one of the most zealous.

There are two ways of performing dilatation of the urethra—either slowly or suddenly. Both have their own indications according to circumstances, but the majority appear, at the present time, to give the preference to slow dilatation. When we wish to employ it, we introduce into the meatus some prepared sponge, a laminaria-tent, gentian root, or we can make a successive dilatation by means of larger and larger sounds.

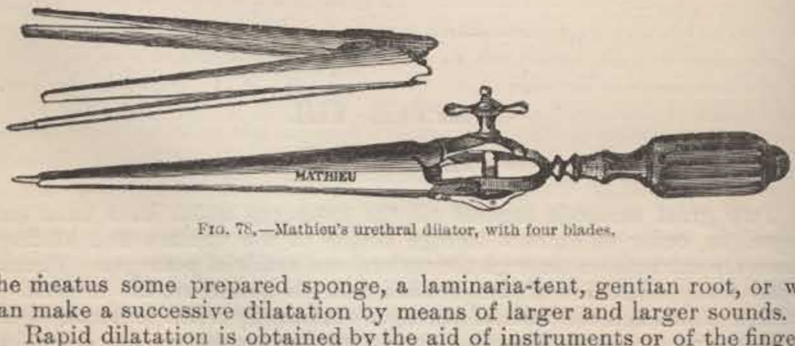

Fig. 78.—Mathieu's urethral dilator, with four blades.

Rapid dilatation is obtained by the aid of instruments or of the finger. The instruments which are preferably employed are various specula, especially nasal, oral, and anal, and dilators of all kinds. Dolbeau's dilator undoubtedly renders great service, but dilatation cannot be pushed beyond three centimetres. Weiss' dilating forceps (three-pronged Weiss' forceps) are employed a great deal in England. In Germany and abroad, Simon's (of Heidelberg) graduated dilator, which permits a dilatation of 0.02 m., is used for this purpose. In America this method is very frequently employed. Jewett obtained, by the mere introduction of the finger,[1] a rupture of the vesical orifice, which enabled him to extract a crochet-needle deeply embedded in the vesical walls of a girl fifteen years old.

The finger is almost always sufficient, especially if we begin by introducing the little finger, previously oiled, which can be slowly turned like a screw, and for which, after a certain lapse of time, the index finger is substituted.

Gorgets are also employed, but these instruments are not, by any means, as useful or as certain as the finger. Some surgeons do not hesitate to replace simple dilatation by incision of the canal, which they perform on the sides by means of a probe-pointed bistoury. Billroth did this in a case which has been quoted above. I do not believe that it is necessary to resort to this measure except in extreme cases, when the foreign bodies are very large.

Observation by P. Bruns, of Tübingen.—Hair-pin in the bladder.—Dilatation.—Extraction.—A girl, aged twenty-four years, who had had a hair-pin in the bladder for several months, entered the Tübingen Clinic after three attempts at extraction with forceps had been made.

After being anæsthetized with chloroform, two superficial incisions were made on the superior and inferior surfaces of the neck of the bladder, and the seven numbers of Simon's dilator were introduced. A narrow forceps was then introduced into the bladder along the index finger, and the hair-pin was removed without difficulty, although it was markedly curved, as an effect, no doubt, of the previous operations. Each branch of this pin was seven centimetres in length. The operation was completed in a few minutes, and was not followed by any accident. It was proved by means of injections of water that the bladder was properly closed by the sphincter, and no incontinence of urine occurred afterward. (Schmidt's Jahrb., 1875, T. CLXVIII., p. 27.)

More recently Ledentu presented to the Surgical Society (1878) a vesical calculus formed around a hair-pin which had fallen into a girl's bladder five months previously. After anæsthesia, this surgeon dilated the uterus with the aid of a three-blade dilator, and then made two small lateral incisions. This preparatory manipulation enabled him to fix one end of the pin with the nail of one finger, to slide a forceps upon it and perform extraction.

The other preparatory operations are the same as for the male bladder, and consist of various injections, whose object is to facilitate the action of the instruments without wounding the walls of the bladder. The displacement of the foreign body with the finger only constitutes, properly speaking, a secondary manipulation in case the introduced finger can touch and move the body so as to make it present at the neck of the bladder in the most suitable position for removal. Many surgeons have thus obtained excellent results, and I cannot recommend it too highly, especially when combined with a vaginal examination, which enables the foreign body to be moved, displaced, and turned about through the septum, and thus facilitates its final extraction.

The patients must be anæsthetized prior to these manipulations, in order to avoid urethral spasm, exaggerated contractions of the bladder, escape of urine, and pain. A neglect of this precaution has been regretted on several occasions. Thus, as Monteil was withdrawing an incrusted etui eight centimetres long, his patient had a hysterical attack, very annoying convulsive movements, and prolapse of the mucous membrane of the vagina and rectum.

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[1] Boston Med. and Surg. Journ., 1876.

Extraction with the finger alone.—The finger alone has been used to extract a foreign body from the bladder. In reality we then restrict ourselves to facilitating spontaneous expulsion by a suitable dilatation of the canal and placing the foreign body in its axis. The following are two very curious illustrations:

Observation by Chapman.—Extraction of a foreign body from the bladder with the fingers.—"At the moment when the operator had left the patient in order to obtain a basin placed on a table, the instrument slipped into the bladder, which was considerably distended with urine.

The extraction of the instrument was effected by the unassisted finger, and without any previous resort to the introduction of prepared sponge. Although the operation presented some difficulties, it only caused slight pain, despite the unfavorable circumstances in the midst of which it was undertaken. It was in fact necessary to conceal the nature of the affection from the patient and family. I was not aware that the urethra was susceptible of ready dilatation. After having introduced a pair of forceps several times without any result, I decided to introduce my little finger for the purpose of determining the exact position of the instrument in a more positive manner. My little finger having entered without any effort, I introduced the index finger of the right hand until it came in contact with the large end of the instrument. I then slowly raised the latter and directed it toward the upper orifice of the canal, and, by the combined movements of my right index finger in the bladder, and of my left hand, which was applied to the abdomen, I succeeded in removing the instrument, although neither the patient nor any of the persons present suspected what had occurred. This catheter had been in the bladder for nearly three weeks." (Works of A. Cooper, p. 568.)

Observation.—Piece of wood in the bladder.—Expulsion after displacement.—"A young woman, aged twenty-one years, the mother of three children, had introduced a piece of wood into the bladder. The index finger readily passed through the urethra into the bladder. The patient had intense pain in the abdomen; the urine was sanguinolent. The foreign body was found to be placed transversely; one of the consulting surgeons, while exploring the bladder with his finger, succeeded in displacing the object. In consequence of this movement the patient was seized with an active desire to urinate. At her request, the patient was anæsthetized; a slight impulse sufficed to engage the foreign body in the canal, and it was expelled almost spontaneously. It was a stick cut to a dull point at one end, the other being surrounded by a broken wire." (Union méd., 1873, T. XV., p. 136.)

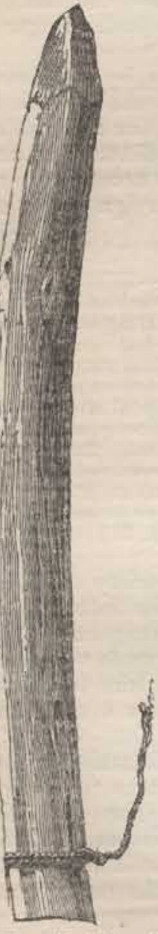

FIG. 79.—Piece of wood removed from the bladder; natural size. (Union méd., 1873.)

This plan deserves to be imitated, and may render useful services. Billroth moved a hair-pin in the bladder with his finger, and thus facilitated extraction.

Prehensile instruments.—As in the male urethra, simple hooks are useful, especially if the body is blunt and flexible; but they are very uncertain, and even dangerous, in pointed and rigid bodies like bodkins, pins, etc. The extraction of certain bodies has been sometimes effected by chance, by means of a simple metallic catheter in the eye of which they have engaged, and which they follow in its retrograde movement.

Observation.—Pin removed by a catheter.—"Lamotte, while searching for the fourth time for a needle in a woman's bladder, could not at first withdraw the catheter because the needle had accidentally become entangled in its two foramina. He succeeded, nevertheless, in removing them, but the needle tore the urethra slightly."

Ordinary forceps are often useful, but they have been objected to on account of acting by chance. Their action is much more certain when the dilatation of the canal enables us, as sometimes happens, to introduce them upon the finger or to combine their action with vaginal touch, which, by raising the two lateral *bas-fonds* of the bladder, greatly facilitates prehension.

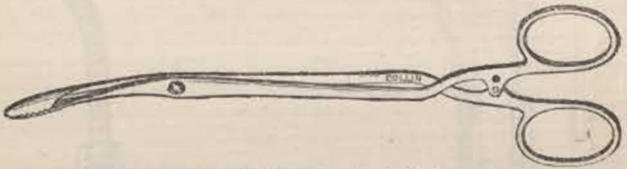

FIG. 80.—Forceps for the extraction of foreign bodies in the female bladder.

All kinds of urethral forceps, lithotrites, forceps, etc., have been employed. The objections to these instruments are that they do not seize the foreign body in a favorable position, and are somewhat uncertain in their mode of action. At all events, if we employ them we must remember Caudemont's manipulation and endeavor to seize the foreign body at one end. Bouchacourt[1] had resort to Heurteloup's lithotrite in withdrawing a needle; this operation was brutal, as he was unable to determine what he was doing. It is better to employ the double forceps plan advised by the same surgeon.[2] All other instruments had failed to extract a pencil which was placed transversely in the bladder. Bouchacourt then introduced a lithotrite (child's size), and afterward a second one, seized the foreign body with one, which fixed it, while he searched for the point

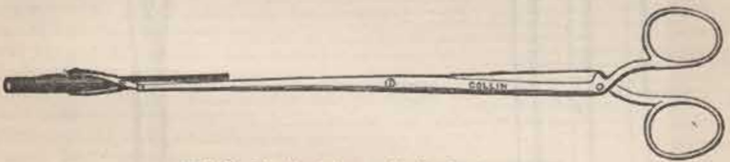

FIG. 81.—Urethral forceps in the foreign body.

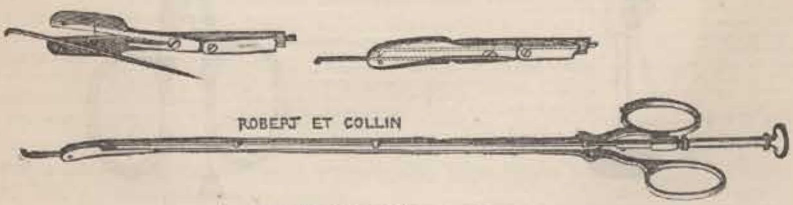

FIG. 82.—Reliquet's urethral forceps.

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[1] Gaz. méd., 1840, p. 700.

[2] Ibid., 1845.

with the other. After he had grasped the point he removed the first lithotrite, and then the second with the foreign body, assuring himself, through the vagina, that he grasped the end firmly. This measure, based on the elasticity of the urethral canal, is capable of application in all cases of rigid foreign bodies which cannot be bent, crushed, or cut.

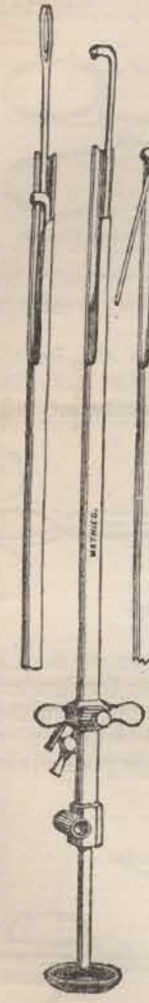

FIG. 83.—Mathieu's revolving redressor.

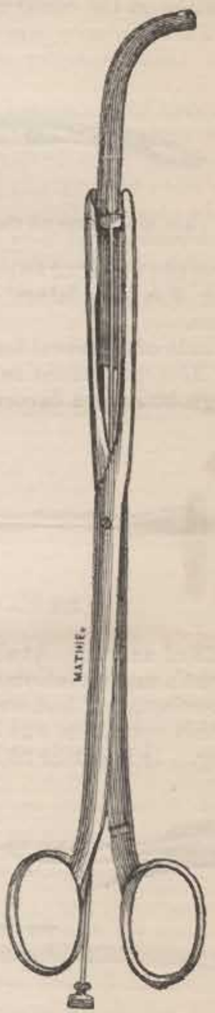

FIG. 84.—Leroy's revolving forceps.

Hunter's straight forceps, the spring-forceps described in discussing foreign bodies of the male bladder, are also capable of application, with a few modifications, in the female.

Redressors.—In order to avoid the inconveniences which result from defective prehension of rigid foreign bodies, some surgeons have conceived the idea of employing redressors, which enable them, when the body has been seized transversely, to carry it into the axis of the canal. The best form is the redressor of Leroy d'Étiolles; but, in case of necessity, we may substitute Charrière's, Mathieu's, or Reliquet's. I republish from the latter author the description of Leroy's vesical forceps:

"Its general shape, says Reliquet, is that of the ordinary dressing forceps.[1] The long blades are concave and approach one another surface to surface, their concavities corresponding to one another. On one side and very near the ends, each blade presents a projection, and these are applied to one another, being imbricated when the forceps is closed. On the other side, upon one of the blades, is a projection which can be moved along this blade from its base to the extremity, by means of the wire which is applied against the blades and terminates in a button."

The instrument being introduced closed, is opened in order to seize the foreign body transversely. On pushing the projection, the latter carries the body along in front of it, makes it turn around the end of the forceps, and thus places it in the axis; it is then withdrawn.

Collin's basculeur.—The most recent instrument was devised a few months ago by Collin. It is composed of two parts, a sheath and a movable forceps which revolves the foreign body upon the sheath after it has been grasped. Fig. 85 shows the various stages of the operation better than could be done by a long description. I cannot too highly recommend this instrument when the surgeon is summoned at the beginning of the symptoms.

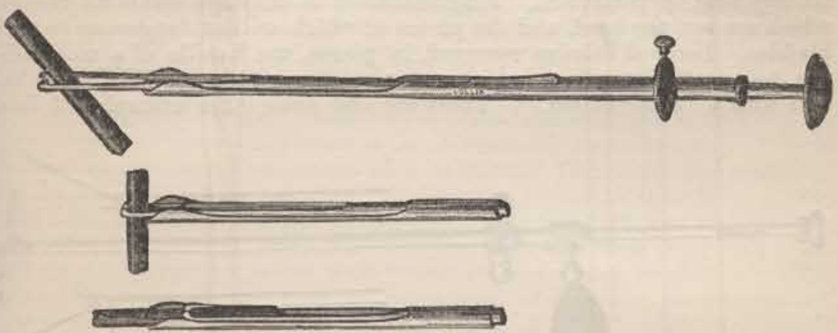

FIG. 85.—Collin's revolving redressor (the figures represent the various stages of the operation).

Despite their ingenious character, redressors are not easily applied, and we should only resort to them in cases of firm bodies which are not too long and are not injurious to the bladder.

Duplicators.—The first duplicators were employed for the extraction of foreign bodies from the female bladder. It is useless to repeat that they are only used for flexible bodies, like pins, brass needles, straw, wire, etc. They are useful instruments.

In 1835, Branchetti invented a special forceps in order to extract a hair-pin from the bladder of a girl sixteen years old; it proved successful. A few years later, Spessa modified it in another case. These instruments were channelled forceps. In 1851, Betti, of Florence, substituted for the interior forceps a hook which drew the foreign body against the canula, when it had been seized transversely, and enabled it to be bent. He succeeded in removing a pin from the bladder of a young girl. A little later, Courty's instruments reproduced all these improvements, and has been most employed. We must also add cutting duplicators, etc., to the list. Leroy advised that the instrument be pushed upward and backward in proportion as the object was bent, in order to avoid wounding the walls, and especially the neck of the bladder.

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[1] Traité des opérations des voies urinaires, p. 673.

Crushing and cutting instruments.—We rarely have occasion to reduce foreign bodies of the female bladder to fragments. This is explained by the fact that their simple extraction does not offer any great difficulties, and when the inconveniences of simple extraction are too great, cystotomy may be performed. Fragmentation is only applicable to bodies which are not too hard, and the pieces of which are not dangerous to the bladder. Leroy d'Étiolles removed, in pieces, the handle of a mustard-pot, ten centimetres long, which was placed transversely. He cut it in two with a "stone-cutter."[1] There are also some other examples of this kind in literature, and almost all have occurred under analogous circumstances.

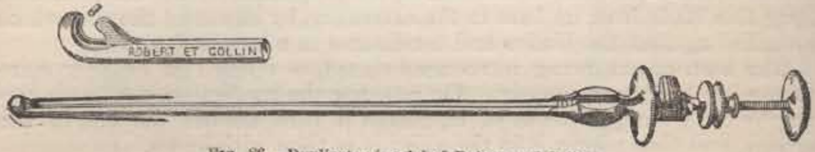

FIG. 86.—Duplicator (model of Robert and Collin).

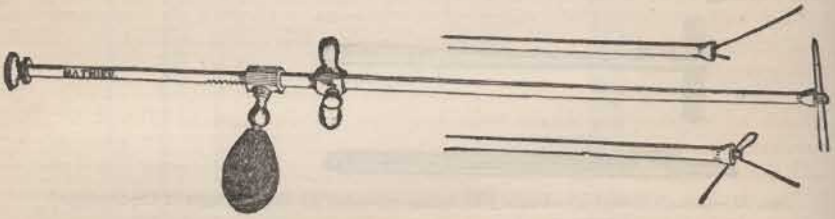

FIG. 87.—Duplicator (Mathieu's model).

When a concretion has formed around a foreign body, must it be crushed? This is a serious question, as the operation exposes the walls of the bladder to the danger of being wounded by the ends of the foreign body if it is rigid. We may perform it without fear if the calculus completely surrounds the foreign body, the size, character, and shape of which are previously known. But I think that there is great danger in applying lithotrity to needles and pencils, and that they overbalance, to a great extent, the advantages attending its employment. It is much better to perform cystotomy, which is simpler, easier, and does not expose the patient to the development of the grave accidents which may occur even in the most skilful hands.

Observation by Guyon.—Calculus formed around a hair-pin.—Lithotrity.—Vesico-vaginal section.—Death.—Autopsy.—On March 2, 1866, a seamstress, nineteen years old, entered the Necker Hospital in Lasègue's service, suffering from fever, leucorrhœa, and difficulty in micturition. She confessed that she had introduced a hair-pin into the bladder two years previously. In the beginning she had pains in the abdomen and difficulty in urination; she had never passed any blood in the urine. Irregular menstruation; emaciation. The fundus of the bladder was painful to the touch, and the catheter showed the presence of a foreign body. Lithotrity was attempted on March 16th, but the calculus was grasped in a diameter measuring about 0.06 m., and escaped under the pressure of the instrument. After several attempts the lithotrite was withdrawn. During the day she passed several fragments as large as hemp-seeds. A second sitting was held on the 17th, but was not more successful than the first; the bladder then became more sensitive. On the following days the patient experienced very intense pains in the lower limbs and knees; the abdomen became tender and tympanitic, and the skin hot; high fever. Finally she presented all the symptoms of peritonitis. Interference became urgent in the presence of these grave symptoms. Guyon decided to perform vesico-vaginal section during narcosis. An incrustation of the walls of the bladder was noticed, especially in the upper part. He removed the pin, which was adherent to the apex of the bladder, and numerous small fragments.

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[1] Académie des sciences, July 22, 1843.

After temporary improvement, the alarming symptoms continued, the patient presented a diphtheritic condition (angina, vulva, vagina), and she finally died on April 19th, nineteen days after the operation.

Autopsy.—Lesions were only present in the urinary apparatus. Left kidney: pelvis dilated, inflamed, congested. Cortical substance of kidney of a slaty color and strewn with abscesses of different sizes, the largest ones attaining the size of a hazelnut. Right kidney: no abscesses, cortical substance slate-colored. Pelvis inflamed.

False membranes in the vagina and on the edges of the incision. The bladder is retracted and the walls thickened. The cavity is lined by false membranes, which diminish its capacity, as their thickness is considerable; upon raising them the walls are found strewn with fungous growths; a small abscess is found on the left lateral wall. (Hybord: Th. de Paris, 1872, T. IV.)

In an analogous case, Passaquay of Lons-le-Saunier performed extraction through the urethral canal without resorting to lithotomy. A pen-holder had become the centre of a calculus. Thanks to the aural and anal specula which he used, the surgeon was fortunate enough to detect and seize the end of the pen-holder through the markedly dilated urethra. He drew the foreign body outward, but was compelled to abandon the efforts at extraction, which were horribly painful and produced terrible general symptoms. He took the precaution of bending the pen-holder, and a few days later he removed the calculus and the foreign body placed in its centre. Despite this success, we cannot recommend a practice which always produces such grave disorders, the least of which is long-continued incontinence of urine.

§ 2. EXTRACTION THROUGH ARTIFICIAL PASSAGES.

Extraction through artificial passages includes that performed through spontaneous fistulæ, the perforations produced by the foreign body, and the operation of lithotomy itself, which creates a new passage.

The first measure is to some extent an operation of necessity, and we restrict ourselves to slightly incising the ulceration made by the foreign body or one of its parts. Two things in general are opposed to its escape after perforation: on the one hand, the shape of the body which opposes its elimination, as occurs with double hair-pins embedded in different parts of the wall; on the other hand, the existence of a calculous concretion formed upon the end of the body which is still in the bladder. Hence, there are somewhat different indications with regard to the manner of performing extraction.

In the first place, simple tractions cannot be too strongly deprecated, because we are ignorant of their effect upon the other portion of the body. In Dolignon's case, reported by Denucé, a piece of wood projected partially into the vagina, and the attempts at extraction caused fracture of the foreign body. It was necessary to extract the piece which remained in the bladder by lithotomy. However, we must sometimes attempt to straighten pins. This was done by Panas,[1] in a young girl who had a double pin in the bladder. He succeeded in grasping it with a dressing-forceps, but, in exercising tractions in order to extract it, one point traversed the vesico-vaginal septum. Noticing this fact, the surgeon performed extraction through the vagina by pulling upon the foreign body and straightening the pin. These manipulations are always dangerous and irregular. It is better to solidly fix the perforating portion, than attempt to extract through the natural passages after having seized the foreign body at the bend. It is then pushed back into the bladder, is turned around, and extraction should be made by means of the curved portion. S. Cooper's and Boinet's method of version of urethral foreign bodies should be performed when possible.

We must avoid exercising too strong tractions upon calculous foreign bodies. If there is a vesico-vaginal fistula, we must not be afraid to make a lateral section in order to facilitate the escape through the vagina. Moreover, this is by far the most frequent site of this variety of perforation, and I know of only one case of extraction through a supra-pubic fistula.

Observation.—Lecieux relates that he extracted, through a vesico-vaginal fistula, twelve stones of various sizes, each of which had as a nucleus the bone of a fœtus which must have passed into the bladder five months previously, in consequence of a fall occurring in the fifth month of pregnancy. (Soc. méd. d'émulation, 1822.)

LITHOTOMY.—With other authors, I will divide the forms of lithotomy into two groups, according as it is supra-pubic or hypogastric, and subpubic. The second group includes urethral and vesico-vaginal lithotomy. I pass by in silence the so-called vestibular lithotomy of Lisfranc, which is condemned by nearly all surgeons. It is useless to insist upon the operative procedure of supra-pubic lithotomy, which does not differ in the two sexes. However, the conditions are here somewhat less favorable, because there is always a superabundance of fat at the situation of the incision, and also because the bladder does not retain injections so well as in man.

Supra-pubic lithotomy for the extraction of foreign bodies has been performed only a small number of times, and the results are far from satisfactory. This is shown by the following illustrations:

Observation.—Extraction of an iron pin by the high method.—Death.—A girl, aged 19 years, introduced into the urethra a long iron pin, which fell into the bladder. Through shame she concealed her mishap for eight months. The pains which she suffered produced such a visible emaciation that her relatives noticed it, and succeeded in making her confess the cause of her trouble. A surgeon introduced a steel sound, and detected the foreign body with difficulty. The introduction of the finger into the vagina did not reveal any induration or tumor. In order to detect the foreign body, which was so obstinately hidden, he dilated the urethra with prepared sponge, and having introduced the finger into the bladder, with the assistance of a gorget he distinctly felt the pin, more than a third of which was incrusted with calculous matter. The calculous portion was lodged near the anterior and superior portion of the bladder, in a kind of pouch which this viscus had formed around the concretion. The remainder of the pin traversed the bladder from right to left. The surgeon did not dare to perform extraction of the foreign body with forceps introduced into the urethra. Lithotomy by the high method was decided upon, and the stone, the nucleus of which was formed by the pin, was readily removed. Despite all the measures employed, the girl died on the third day after the operation. (Académie des sciences de Paris, 1758.)

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[1] France méd., 1876, p. 126.

Observation.—Supra-pubic lithotomy, performed on a woman twenty-eight years old, in order to remove from the bladder an etui which had remained there for three months. It was incrusted in its centre, and this explains the necessity of the operation, despite the previous dilatation of the urethra. Death on the twenty-first day. (Rétif: Diss. sur les corps étrang. de la vessie, Paris, 1811.)

Urethral Section.—The methods of performing urethral section vary according as the incision is made high up in front, on one side and transversely, or on both sides in the same direction. The terms, Collot's section given to the first, lateral section to the second, and bilateral section to the third, take these differences into consideration. The incisions are made with a probe-pointed bistoury (Billroth), or, better still, with Frère Côme's lithotome for urethral section. The two latter methods appear to have been employed in preference to the first. In 1868, Richet[1] performed simple lateral section in order to remove a calculus formed around a hair-pin.

Petrequin performed Collot's urethral section in order to remove a bodkin eight centimetres long from the bladder of a young girl. He incised the urethra on one side high up, and a little to the left, with the concealed lithotome. The author applies the term urethro-vestibular to this plan, but it does not differ from Collot's and Dubois' urethral section. Finally, bilateral section was performed in another case.

Observation.—Bilateral section for extraction of an etui.—Recovery.—"A girl, aged 20 years, had introduced into her bladder a wooden etui filled with pins and sewing-needles. Having placed the patient in the proper position, Rigl injected the water into the bladder, and cut the urethra on both sides with the concealed lithotome. The position of the etui, which was situated behind the pubis, was changed by means of the finger, after which it was grasped and withdrawn. It was three and a half inches long, and an inch and a half in circumference. The patient made a perfect recovery." (Annales de la Soc. de méd. prat. de Montepellier, 1810.)

Whatever may be the form of urethral section performed, the patient is placed in the position for a speculum examination, after the bladder has been injected and the rectum emptied. The incision is made during the first stage, and extraction with the aid of suitable forceps in the second. Is it necessary to introduce a catheter *à demeure* after the operation? Modern authors do not favor this plan, and regard it as either useless or dangerous. Only a few years ago surgeons never omitted this precaution, for fear of urinary infiltration; but experience has taught our contemporaries better. Its slight utility in Fleury's case, in which it served the girl as an instrument of masturbation, also deserves to be taken into consideration.

Vesico-vaginal section.—This consists in the formation of an artificial passage for the foreign body through the vesico-vaginal septum. Some introduce sutures after the operation, others do not; but the operations remain practically the same. The patient is placed on the back, according to the French plan, on the abdomen, as Velpeau advises, and on the side, according to the American plan. A catheter or a curved grooved director being introduced into the urethral canal, projects at the fundus of the bladder into the vagina, which is dilated by means of an English speculum. With his left index finger the surgeon steadies the groove of the catheter, and cuts upon the latter in such a manner as to reach its groove. Without leaving this he then cuts from behind forward to the neck of the bladder; this gives the incision a length of two or three centimetres.

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[1] Thèse d'Hybord, 1872.

Vallet makes a transverse incision, and uses for this purpose an articulated catheter, which can be bent in the bladder at a right angle. Sutures may be introduced after extraction, which is performed in the usual manner; but we must not rely too much on its results, and should rather endeavor to secure secondary union by granulation.

Bouisson performed vesico-vaginal section in order to withdraw, from a girl's bladder, an elongated calculus whose nucleus consisted of a metallic pen-holder which had been introduced through the urethra. For this purpose he made an incision along the median line of the septum. Guyon has also performed this operation. Under certain rare circumstances, the incision is made upon the projecting foreign body. Thus, Denucé reports that he withdrew through the vagina an embroidering-needle, which projected and could be readily seized with forceps, but which was retained like a hook. The incision on the projecting body was very easily performed, and it was then removed.

Treatment after Extraction by Various Methods.—Whatever may be the method employed, the bladder should be cleaned, after extraction, by means of detergent injections of large quantities of water. The patient should then be kept quiet, and the diet should be restricted for the first few days. Should a catheter be introduced into the bladder *à demeure*, should catheterism be performed several times a day, or should the emission of urine be left to itself? Several cases must be taken into consideration, according as the extraction has been performed by this or that method. In a general way there is no advantage in performing catheterism during the first few days, as it does not prevent the incontinence which is the almost inevitable result of the dilatation. If the ammoniacal urine irritates the parts and inflames the inner surface of the thighs, it is better to introduce a securely fastened catheter *à demeure* and an urinal.

Bloody extraction is always followed by an urinary fistula, which requires further care and a special operation in order to relieve the patient from a disgusting infirmity. Before attempting anything we must wait until the cystitis disappears, the urine becomes clear and normal, and the general condition, which is compromised by the presence of the foreign body, has improved.

Comparative Results furnished by Various Methods.—As I have stated above, extraction through the natural passages, even at the very beginning, has scored some brilliant successes. It is evidently a simple, natural, and rational method, and presents the great advantage over lithotomy of not frightening the patients by the fear of bloody interference. Is it necessary to enter into a long dissertation in order to prove the excellence of a method which daily secures the approval of surgeons more and more? It presents great advantages when the foreign bodies to be extracted are situated in the bladder, and especially in this particular case, because the urethral canal is already dilated in individuals who are the victims of this class of accidents, and little is necessary in order to obtain the degree of dilatation necessary for exploration and for manipulations with the fingers and instruments.

But does this imply that the extraction is free from failures, and that complications are never produced? There is no doubt that no method can make such pretensions, and, like the other plans, extraction through the natural passages presents some inconveniences. Patients have sometimes died in consequence of the operation, and the opponents of this method have carefully collected all the cases which can throw discredit on urethral dilatation, which they chiefly oppose. But, as the reader can convince himself, we cannot accuse the dilatation as the cause of these accidents, which are due to the manipulations in the bladder, or are the so frequent final complications after various forms of lithotomy as well as after dilatation and extraction. One woman, whose history has been reported by Labbé, died of purulent infection.

Observation.—Etui in the bladder.—Extraction.—Death.—Eighteen months ago a woman entered La Pitié who had introduced a needle into the urethral canal. Dilatation of the canal after chloroform anæsthesia. Extraction of an etui 0.08 m. long, incrusted with calcareous salts. Symptoms of purulent resorption. Death. (Société de chirurgie, February 9, 1876.)

The causes of death were even more general in Nélaton's patient, who died of erysipelas.

Observation.—Foreign body in the bladder of a pregnant woman.—Extraction.—Confinement.—Erysipelas.—Death.—A woman, aged twenty-seven years, entered Nélaton's service, suffering from a vesical calculus; she was in the fifth or sixth month of pregnancy. A hard body of a considerable size was found in the bladder. The patient confessed that a small twig, seven centimetres in length, had fallen into her bladder; from that time she suffered from severe pains in the bladder, which increased at every moment. Nélaton proposed the introduction of a cone of prepared sponge in order to dilate the urethra, but the finger entered with facility. The patient being anæsthetized, Nélaton slipped along the finger, which had been introduced into the bladder, a dressing-forceps which seized the foreign body in the middle. One end was then grasped by a second pair of forceps, and a piece of wood was removed, six centimetres in length, and covered by calcareous concretions. Although the operation had been simple, erysipelas developed in the genitals, the left labium majus became gangrenous, and the erysipelas attacked the right thigh. Four days after the operation she was delivered of a fœtus which only lived a few minutes. Nélaton made fruitless attempts to remove the placenta, which was delivered by the interne an hour and a half afterward. The erysipelas continued, purulent deposits formed in the knee and forearm, and the patient died on the seventh day.

At the autopsy, among other lesions, two depressions were found in the bladder corresponding to the lesions produced by the ends of the foreign bodies. The urethra showed traces of erosions. (Hallé: Gaz. des hôpitaux, p. 221, 1862.)

The dilatation has been accused of producing incontinence of urine, which, if not permanent, is at least very persistent. In fact, on reading the articles published in the journals, it is found that incontinence is frequent, but rarely rebellious, and that this infirmity disappears at the end of several weeks, sometimes several months, when properly treated. Moreover, this accident is rare if the dilatation is performed methodically, and if care is taken to dilate the canal slowly and intermittently, after the production of anæsthesia. It is not necessary to injure the parts, and we can thus succeed in obtaining a diameter of two centimetres, which will be sufficient when the foreign body or concretion is not too large.

Does lithotomy present any results comparable to those of natural extraction? If we exclude the statistics of supra-pubic lithotomy, which is an unfavorable operation in woman, since, according to Denucé's tables, there have been five deaths among seven cases, we find that the various other infra-pubic operations are very advantageous with regard to operative mortality. The same author has succeeded in collecting only two fatal cases among fifteen operations made for the extraction of foreign bodies. Several unfortunate cases have been published since. Thus, Guyon saw one of his patients, who had been operated on for vesico-vaginal section, die during the course of a renal affection. Recently, Zoeinbieki reported a case of death after vestibular section, but we can attribute this result to the employment of a faulty method of operation. The following is the history of the case :

Observation.—Zoeinbieki presented a calculus the centre of which was occupied by a pin-case around which calcareous and phosphatic layers had been deposited under the form of a complete envelope. The length of time during which it had been present in the bladder had not been determined, the patient refusing to give any information. For two or three months she had presented all the ordinary symptoms of vesical calculi, such as cystitis, incontinence of urine, hemorrhages, radiating pains, and the escape of fine gravel. The patient had been sent to the hospital because she was supposed to be suffering from stone.

It was only after protracted, fruitless manipulations at lithotrity that a large foreign body was recognized, after the urinary reservoir had been explored with the finger. It became necessary to make the operation of vestibular lithotomy, and it was only after it had been performed that the calculus could be removed. The patient died of purulent infection. (Bull. de la Soc. anat., 1874.)

Lithotomy is none the less a good operation despite a few failures. For numerous reasons, the majority of authors prefer vaginal incision to urethral lithotomy. In this way incontinence is more surely avoided. The incision of the septum undoubtedly leads to the formation of a fistula, but the cure of this affection is very simple at the present time. However, Pamard d'Avignon failed in several attempts in the case of a young girl, because the wilfulness and the vicious habits of the patient forced him to resort to cauterization in order to treat the fistula, which was rebellious to sutures.

The choice of a method of treatment.—When the surgeon is called at the outset, and obtains sufficient information concerning the nature of the foreign body, he may choose among various methods of treatment. They are determined according to the individual case. Is it not evident, for example, that extraction with forceps should be the rule, when a portion of the body has already engaged in the urethra. In a general way we must begin by resorting to the simplest methods, to those which give the best results without exposing the patients to any risks.

If the urethra is accessible to the fingers, if it is supple and dilatable, we must attempt to direct the foreign body into the axis of the urethra, after having recognized its presence and situation, and cause it to be expelled by means of injections. But these measures often fail, and it is better not to wait for a very problematical natural expulsion, and to resort at once to dilatation by the finger or by instruments constructed for this purpose. When the urethra is elastic and supple, and will sustain sufficient dilatation, these preparatory manipulations will suffice to afford an entrance into the bladder and to withdraw the body. If these conditions are not found combined, it is better to imitate the conduct of Billroth and Ledentu, and to make free lateral incisions, which are not dangerous and spare the urethra.

The choice of the surgeon, with regard to the measures which should be employed for extracting the foreign body, must be based upon the nature of the object, its susceptibility to being bent, cut, straightened, etc. Whenever possible, it is best to attempt to remove it by one end, the object being turned and placed in the axis of the instruments. I can give no positive precepts in this respect, because they vary so infinitely.

What is to be done when the body remains in the bladder for a certain length of time, and becomes the nucleus of a calculous concretion? In such a case we must be certain that extraction through the natural passages is impossible, before resorting to lithotomy. When the bladder is in a very bad condition, and the general health is compromised by an advanced cachectic condition, it is better to resort at once to lithotomy than to attempt extraction. In fact, this operation very frequently cannot be performed until the calculus has been crushed, or until the performance of manipulations of prehension or displacement, which are not inoffensive in a healthy bladder, and which may be very injurious in the diseased organ. On the contrary, we must attempt manipulations at extraction when the bladder is only slightly affected, the urethra supple and dilatable, the calculus small and elongated.

Lithotomy should therefore be reserved as a last resource in the worst cases, in those in which the other methods are inefficient or dangerous. Apart from the condition of the bladder, some other circumstances almost demand its employment. These include the large size of the calculus, the fragile nature of the foreign body, the perforation of the fundus of the bladder by one of its irregularities, etc.

Finally, if the performance of lithotomy has been decided upon, the surgeon should employ urethral or vaginal section in preference, according to the special cases and indications.